



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
01.09.2010 Bulletin 2010/35

(51) Int Cl.:
A47C 7/56 (2006.01) A47C 1/121 (2006.01)

(21) Application number: **10154140.7**

(22) Date of filing: **19.02.2010**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(72) Inventor: **Figueras Mitjans, José**
08186, LLICÀ D'AMUNT (Barcelona) (ES)

(74) Representative: **Cabinet Plasseraud et al**
52, rue de la Victoire
F-75440 Paris Cedex 09 (FR)

(30) Priority: **26.02.2009 ES 200900530**

(71) Applicant: **Figueras International seating S.L.**
08186 LLicà d'Amunt (ES)

(54) **Folding armchair for conference halls**

(57) The invention relates to a folding armchair for conference halls, formed by a seat (1) and a backrest (2) articulated to one another and the assembly being arranged by means of articulations (9) between the seat (1) and side supports (5), rotation devices (10) being in-

corporated in the articulations (9), which rotation devices allow a free rotation in the direction of the swinging of the seat (1) towards a use position, but which in the direction of swinging towards an upward folded position determine a progressive damping of the rotation.

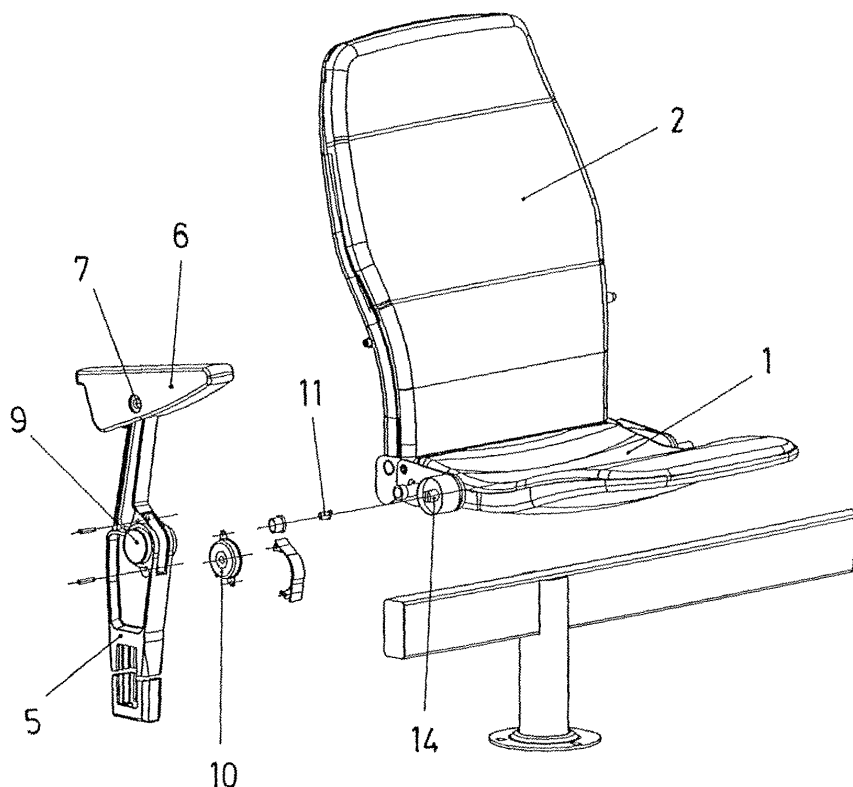


Fig. 3

Description

Field of the Art

[0001] The present invention relates to armchairs with a folding structure which are arranged in halls of large audiences of any type, and which are generally incorporated in distributions of parallel rows, proposing an armchair of this type with a mounting implementation improving the functional features of the articulation of the folding.

State of the Art

[0002] It is usual to arrange rows of parallel rows of armchairs for seating the attendees in movie theaters, conference rooms, and similar enclosures, a good use of the space place being obtained by means of said distribution.

[0003] In this sense, for the purpose of facilitating the passage between rows of armchairs for the entrance and exit of the users, as well as for cleaning operations, the armchairs are usually determined with folding solutions aimed at freeing up the space existing between the rows of armchairs when they are not being used.

[0004] There are in this sense folding solutions for the armchairs based on an articulated mounting of the seat and of the armrests, even with swinging combinations between the seat and the armrests, such that when the armchair is being used, the weight of the user maintains the assembly in the unfolded use position, whereas when the armchair is vacated, the assembly thereof automatically withdraws in a folded position of the seat and the armrests on the backrest.

[0005] In the usual arrangement of said armchairs, the backrest normally has a certain backward inclination in order to favor the comfort in the use of the armchair, which means that the backrest in turn partly invades the space located behind the armchairs.

[0006] In relation to the foregoing, there are also solutions combining the folding of the seat and of the armrests with an advance of the position of the backrest when the armchair is folded, such as the solution of Spanish utility model number 282,120, which describes the arrangement of the seat in an articulated mounting with respect to fixed structural sides, and the articulated mounting of the backrest on the rear edge of the seat, the armrests being independently articulated on the fixed structural sides, being supported on the structural assembly of the backrest, with springs tending to position said armrests in an upward folding collapsing, this action being transmitted, by means of the armrests, on the assembly of the backrest and the seat, in the sense of making this assembly swing towards the folded position.

[0007] With this solution it is achieved that, due to the weight of the backrest and the action of the springs acting on the armrests, when the armchair is vacated the entire assembly is automatically positioned in the folded position; but said folding action occurs abruptly, causing

noise and, over time, maladjustments, in addition to the risk of being able to strike the users.

Object of the Invention

[0008] According to the invention an armchair is proposed which is structured with a combined arrangement between the backrest, the seat and the armrests, as in Spanish utility model number 282,120, but with an incorporation of delay and damping in the mounting articulation for mounting the seat, improving the functional features of the folding of the assembly of the armchair.

[0009] This armchair object of the invention comprises, as in the known solution, a seat mounted in an articulated manner on fixed side supports and a backrest resting and supported in an articulated manner on the rear edge of the seat, whereas armrests are in turn articulated on the fixed sides, which armrests tend to swing with the front part upwards, whereas with the rear part they are supported on the structure of the backrest.

[0010] According to the invention, in each mounting articulation for mounting the seat on the fixed side supports there is incorporated a device comprising a peripheral part and a central part which are rotationally linked, there being both parts a distribution of rollers which allow the free rotation in one direction, but which in the opposite direction determine a progressive damping, from an angular position, between the peripheral and central parts of the device.

[0011] The central part of this rotation device incorporated in the mounting articulations for mounting the seat on the fixed side supports incorporates associated thereto an axial rod finished at the free end with a transverse conformation, said transverse conformation fitting in a slightly wider groove of the end of a rod emerging perpendicularly from and integral with a plate fixed to the seat.

[0012] Thus, when the seat is forced to rotate on the mounting articulations from the folded position towards the use position, by means of the coupling between the rod of the rotation devices incorporated in the mounting articulations and the rod of the corresponding plate fixed to the seat, there is a rotational pulling of the central part with respect to the peripheral part of said rotation devices incorporated in the mounting articulations, but without a repercussion in the rotation function, since in this direction the mentioned rotation devices incorporated in the mounting articulations allow free rotation.

[0013] However, when the seat swings from the use position towards the folded position, due to the weight of the backrest and the action of the thrust of the armrests, when the armchair is vacated, the rotation of the seat rotationally pulls the central part of the rotation devices incorporated in the mounting articulations, a progressive damping of the rotation, from an angular position, occurring in this case by the internal mechanism of said rotation devices of the mounting articulations, thus making the final path of the folding of the armchair smoother, where-

by the folding occurs in a more advantageous manner, without any abrupt impact at the end of the path.

[0014] At the beginning of the swinging of the seat from the use position towards the folded position, the rotation of the seat does not pull the central part of the rotation devices of the mounting articulations due to the clearance between the end transverse conformation of the rod of said central part of the rotation devices of the mounting articulations and the groove of the rod of the corresponding plate fixed to the seat, until said end transverse conformation of the rod of the central part of the rotation devices abuts against the walls of the groove of the rod of the corresponding plate fixed to the seat, which is when the rotational pulling of the central part of the rotation devices starts.

[0015] Therefore, in said swinging of the seat from the use position towards the folded position, during a first section of the path of the swinging the damping action of the rotation devices incorporated in the mounting articulations has no effect, thus allowing easily starting the swinging movement, the rotation devices then starting to act with a progressive damping effect, to make the swinging until the end of the path smoother.

Description of the Drawings

[0016]

Figure 1 shows a side view of an armchair according to the object of the invention in a use position.

Figure 2 is a side view of the same armchair as above in a folded position.

Figure 3 is a perspective exploded view of the armchair with respect to a mounting side support.

Figure 4 is an enlarged perspective detail of a side support of an armchair according to the invention, with an exploded view of the assembly of the mounting articulation for mounting the seat.

Figure 5 is a perspective detail of the plate which is fixed on the side of the seat of the armchair for the mounting with respect to the corresponding side support.

Figure 6 is a front view of the inside of the rotation device which is incorporated in the mounting articulations for mounting the seat with respect to the side supports of the armchair.

Figure 7 is an enlarged section of a mounting articulation for mounting the seat on the corresponding side support of the armchair.

Detailed Description of the Invention

[0017] The object of the invention relates to a folding armchair of those which are distributed in rows in movie theaters, conference rooms or similar enclosures, with an advantageous mounting implementation for the functionality of transformation between a folded position and a use position.

[0018] The assembly of the proposed armchair consists of a seat (1) and a backrest (2), which are attached to one another in an articulated manner by means of plates (3) which are fixed in the sides of the rear edge of the seat (1) and plates (4) fixed in the sides of the lower edge of the backrest (2).

[0019] Said assembly formed by the seat (1) and the backrest (2) is mounted with respect to side supports (5) on which there are incorporated in turn respective armrests (6), said armrests (6) being secured in their mid longitudinal area by means of an articulation (7), with respect to which there is also attached a connecting rod (8) which at its other end is attached to the backrest (2), each armrest (6) being supported at its rear part on the respective connecting rod (8), with the downward thrust in said support by the action of a spring (not shown) acting on the armrests (6).

[0020] The mounting with respect to the side supports (5) is established by means of articulations (9) for the rotation of the seat (1) on said side supports (5), such that when the armchair is vacated, due to the weight of the backrest (2) and to the downward thrust by the springs of the armrests (6), the seat (1) swings automatically towards a folded position in an upward collapsing, the armrests (6) also collapsing in an upward folding due to the action of their springs, as observed in Figure 2.

[0021] For the use of the armchair, starting from the folded position, the user has to exert a force to make the seat (1) swing against the weight of the backrest (2) and of the thrust exerted by the armrests (6) due to the action of their springs, such that once the use position like the one depicted in Figure 1 is reached, the weight of the user himself when sitting keeps the armchair in this position.

[0022] According to the invention, to prevent the abrupt impact due to the free action when the armchair is folded, in the mounting articulations (9) for the mounting on the side supports (5) there is incorporated a rotation device (10) exerting a function of damping of the folding movement.

[0023] Said rotation device (10) is fixed in the corresponding side support, comprising (Figure 6) a peripheral part (10.1) and a central part (10.2), which are rotationally linked by means of a set of rollers (10.3) allowing the completely free rotation in one direction, whereas in the other direction they determine a progressive damping of the rotation between the mentioned parts (10.1 and 10.2).

[0024] The central part (10.2) of each rotation device (10) incorporates integrally attached thereto an axial rod (11), which has at its free end a transverse conformation (12) by means of which it fits (Figures 5 and 7) in a groove (13) of the end of a rod (14) emerging from the respective plate (3) which is fixed on the seat (1) of the armchair.

[0025] With this arrangement, the rotation of the seat (1) in the mounting articulations (9) for the mounting on the side supports (5) is determined through respective rotation devices (10), which are arranged in said articulations (9) such that they allow the free rotation in the

direction of the swinging of the seat (1) towards the use position, determining the progressive damping action in the direction of the upward swinging of said seat (1).

[0026] Thus, the unfolding of the armchair from the folded position towards the use position does not experience any incident due to the rotation devices (10) incorporated in the mounting articulations (9), but in the folding from said use position, when the armchair is vacated, the folding movement experiences a progressive damping retention due to the mentioned rotation devices (9) incorporated in the mounting articulations (9), thus preventing the abrupt impact of the mobile structural assembly in the final stop of the path.

[0027] The transverse conformation (12) of the end of the rod (11) which is associated to the central part (10.2) of the rotation devices (10) has a slightly smaller width than the groove (13) of the rod (14) integral with the respective plate (3) fixed to the seat (1), such that in the folding movement of the armchair, during a first part of the swinging of the seat (1) there is no rotational pulling of the central part (10.2) of the rotation devices (10) due to the clearance between the transverse conformation (12) of the rods (11) and the corresponding groove of the rods (14), therefore the rotation of the swinging is free in this initial part of the path, thus facilitating the start of the swinging.

[0028] Once the swinging of the seat (1) in these conditions has started, when the transverse conformation (12) of the rods (11) abuts against the side walls of the groove (13) of the corresponding rods (14), the rotational pulling of the central part (10.2) of the rotation devices (10) occurs, the latter then performing the function of the progressive damping of the rotational movement to prevent an abrupt action of the folding of the armchair.

Claims

1. A folding armchair for conference halls, comprising a seat (1) and a backrest (2) articulated to one another and the assembly being mounted by means of articulations (9) between the seat (1) and side supports (5), the backrest (2) exerting with its weight an action determining the withdrawal of the assembly in a folded position when the armchair is vacated, **characterized in that** in the mounting articulations (9) for the mounting on the side supports (5) there are incorporated rotation devices (10) which have a mechanism allowing a free rotation in the direction of the swinging of the seat (1) towards a use position, determining a progressive damping of the rotation in the direction of the swinging towards the folded position.
2. The folding armchair for conference halls according to claim 1, **characterized in that** the rotation devices (10) which are incorporated in the mounting articulations (9) for the mounting on the side supports (5)

comprise a peripheral part (10.1) and a central part (10.2) which can rotate in relation to one another, rollers (10.3) being included between them which allow the free rotation in one direction, whereas in the other direction they cause a progressive damping of the rotation.

3. The folding armchair for conference halls according to claims 1 and 2, **characterized in that** the central part (10.2) of the rotation devices (10) axially incorporates a rod (11) provided at the end with a transverse conformation (12) by means of which it fits in a groove (13) of the end of a rod (14) emerging from a plate (3) which is fixed to the seat (1).
4. The folding armchair for conference halls according to claims 1 to 3, **characterized in that** the transverse conformation (12) of the rod (11) of the rotation devices (10) has a slightly smaller width than the groove (13) for the fitting in the corresponding rods (14), determining a clearance which makes there be no rotational pulling of the central part (10.2) of said rotation devices (10) in a first path of the swinging rotation of the seat (1) towards the folded position, said rotation devices performing a progressive damping after this initial path of the rotation, to make the folding smoother.

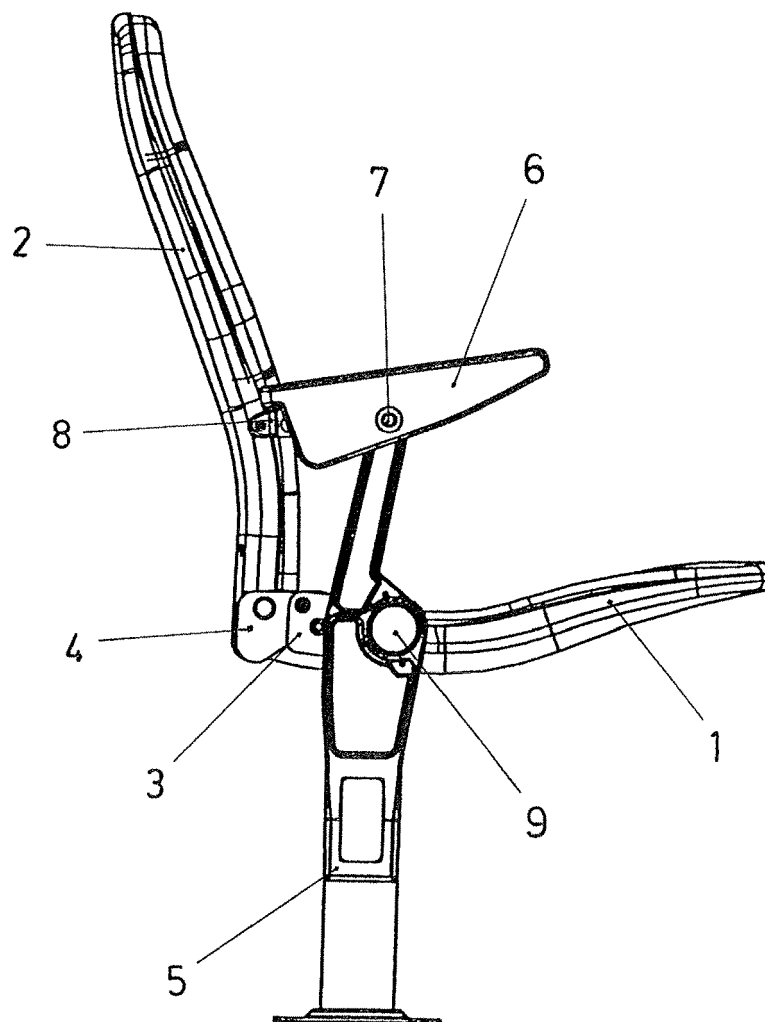


Fig. 1

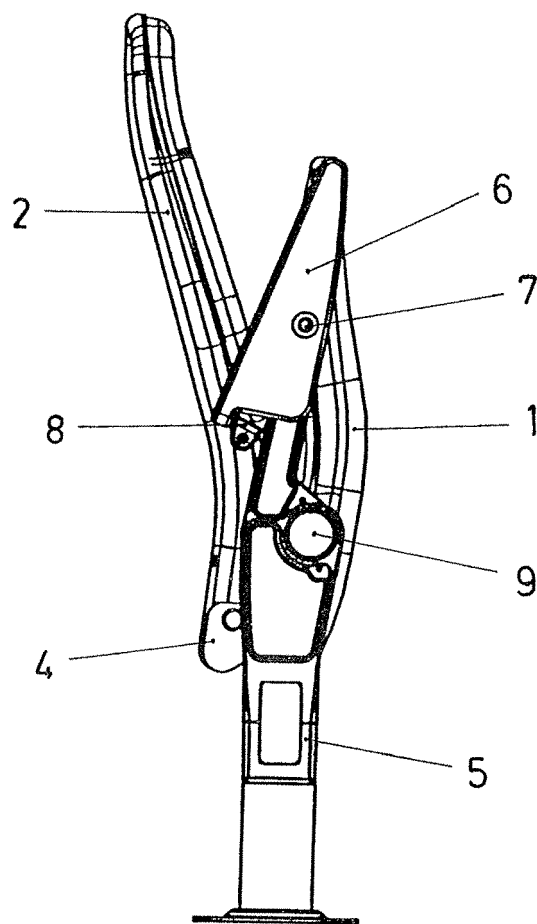


Fig. 2

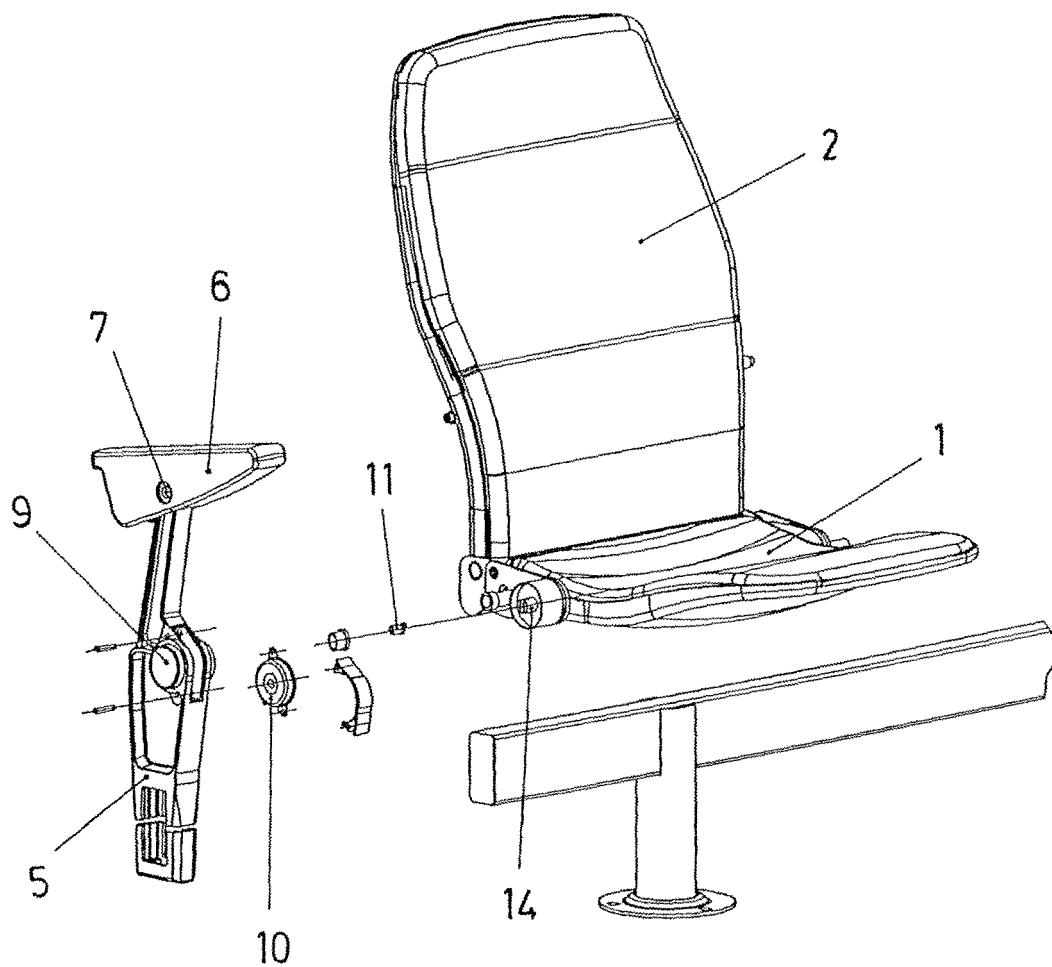


Fig. 3

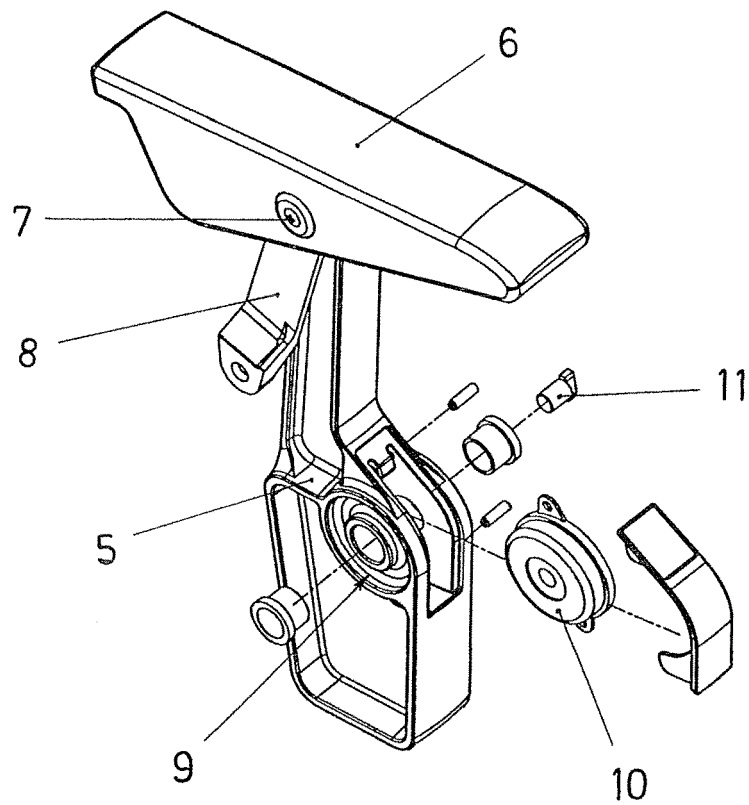
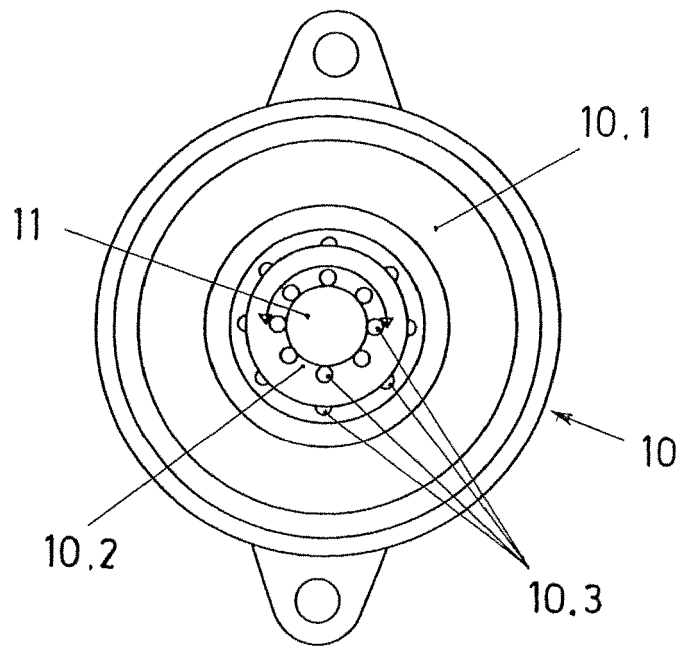
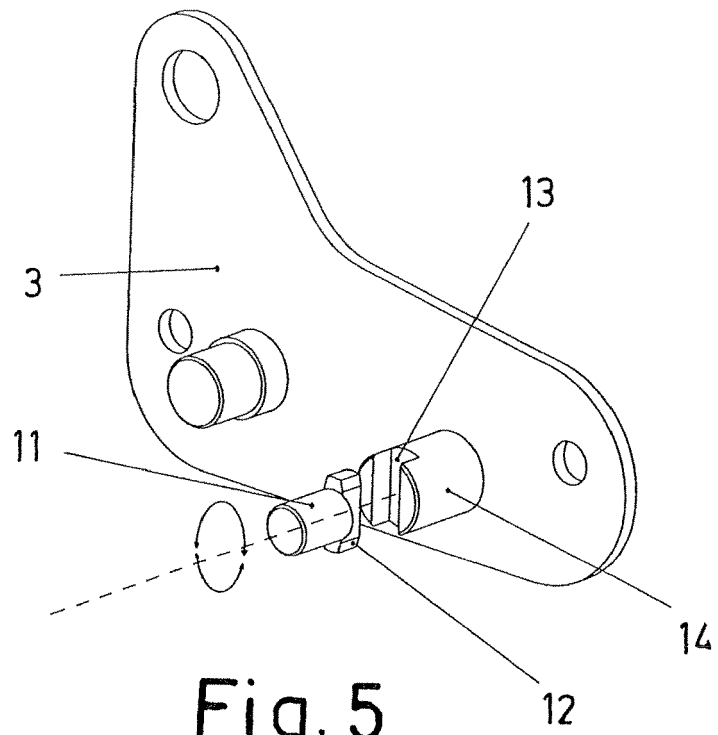


Fig. 4



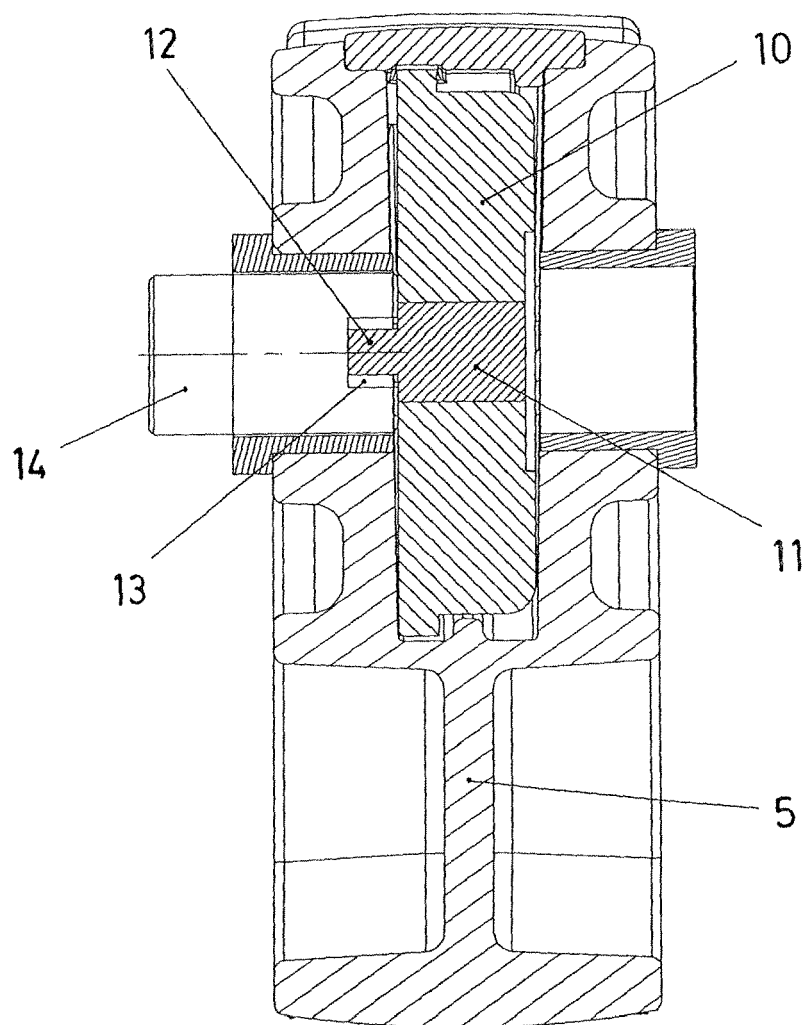


Fig. 7



EUROPEAN SEARCH REPORT

Application Number
EP 10 15 4140

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Place of search The Hague		Date of completion of the search 4 June 2010	Examiner Kis, Pál
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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