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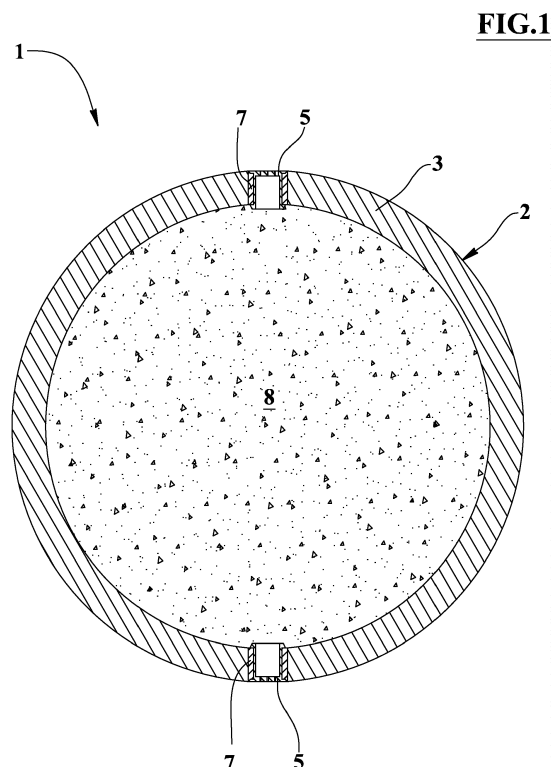
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(54) **EXERCISER DEVICE WITHOUT REBOUND**

(57) An exerciser device without rebound comprises a ball means (2) having a coating means (3) of spherical shape. The device comprises at least one vent means (5) applied to the coating means (3), said at least one vent means (5) put the inside of the coating means (3) in flow communication with the outside.

In a crash or impact condition of the ball means (2)

against an object, person or other element, the at least one vent means (5) is assigned to allow an air flow from the inside of the coating means (3) toward the outside to dissipate an amount of energy generated by said crash or impact reducing or eliminating the rebound of the device.



Description

[0001] The present invention relates to the field concerning the tools for the physical exercise of the human body and refers to an exerciser device without rebound of modular type suitable for different gymnastics, physical and skill training types.

[0002] There are known medical balls made of a spherical layer in synthetic rubber provided with inflation valve to increase or decrease its rebound. This known ball, even without internal pressure, has an average rebound from 2 meters, of about 40 cm.

[0003] Such rebound is due to the elasticity of the material of the spherical layer and of the air contained therein that, being compressed, determines an increase of the air internal pressure.

[0004] A drawback of this known medical ball is that is not usable in these exercises, training and rehabilitation in which the rebound is undesirable.

[0005] Another drawback of the known medical ball, is that its weight is almost completely determined by the weight of the spherical layer resulting therefore too light for many exercises.

[0006] There are also known physical exercises that are performed with means and instruments known in other fields such as large tires, such as clawed tires for tractors, and clubs, for example of the kind provided with a long handle and with an iron head parallelepiped shaped normally used for fixing poles and masts in the ground.

[0007] A drawback of such means and tools consists in that they can be very difficult to be used and be very dangerous for the user and for the bystanders; in fact the tire is elastic and the hammer rebound in a dangerous manner. In addition, the center hole of the tire causes another risk because if the hammer head ends therein (because of an aim error or because of excessive impetuosity) the handle of the hammer turns around the tire side and can snatch the hammer from the user hands with disastrous consequences. It is also easy to understand how an aim or use mistake of the club can make damages and injuries. Finally these means and tools are not suitable for people not in perfect physical form, not untrained and not particularly robust.

[0008] They are known hand weights that generally consist of a rounded shape metal body equipped with an eyelet handle made in one piece with the body.

[0009] Prior document US 2011/0287904 discloses an exercise bag configured to support a large mass of fill material. The user can insert the fill material to exercise and remove the fill material when desired. Said exercise bag includes a neck funnel. The neck funnel can allow a user to insert or remove the fill material. In particular, the neck funnel can include an opening that allows the user to access the interior of the body. The user can then add fill material or remove fill material from the interior of the body to add mass or remove mass, as desired. The exercise bag can include a drawstring. The drawstring can be configured to keep the neck funnel closed when so

desired by a user. In particular, the drawstring can include a cord or string which is threaded through the neck funnel. As the user pulls more of the cord out of the neck funnel the opening of the neck funnel becomes more narrow, preventing fill material from being added or removed. In contrast, as the user inserts more cord into the neck funnel the opening of the neck funnel becomes wider, allowing fill material to be added or removed. The exercise bag can include a clamp. In at least one implementation, the clamp can be used to secure the drawstring in the desired position. In particular, the clamp can keep the drawstring pulled out of the neck funnel, which can, in turn, ensure that the fill material is not removed. For example, during an exercise routine, the fill material will tend to leave the exercise bag. The clamp can keep the drawstring in position to prevent the fill material from exiting.

[0010] The exercise bag can include a sealing button that can be located in the body near the neck funnel. The sealing button can prevent fill material from entering the neck funnel. In particular, the fill material can move while the exercise bag is being used in an exercise routine. The sealing button can prevent the fill material from entering the neck funnel where it could potentially rip the neck funnel. Additionally or alternatively, the sealing button can be opened to allow fill material to be inserted or removed into the body.

[0011] Prior document US 2005/0079963 discloses an exercising device including a ball body having a peripheral wall and a receiving space, a predetermined volume of filler, and two pulling units. The peripheral wall has a filling hole in fluid communication with the receiving space and a valve member inserted detachably into the filling hole. The filler is introduced into the receiving space through the filling hole. The valve member is formed as a plug. The plug is tapered, and is inserted detachably into the filling hole so as to prevent leakage through the filling hole. As such, the receiving space is sealed completely.

[0012] Prior document US 5,242,348 discloses a multifunctional exercise device including a resilient elastomeric body having a cylindrical hollow core designed to accept multifunctional and nestable hand weights for disposition in position in the cylindrical core of the resilient elastomeric body. The elastomeric body is covered with a cover of cloth or other suitable material having an opening at one end for accessing the removable weights and a multifunctional elastic strap for encircling the circumference of the multifunctional exercise device and for assisting in maintaining the detachable weights in position in the cylindrical core of the multifunctional exercise device. The multifunctional exercise ball may include a pump means for adding fluid pressure to the interior of the body. The air or fluid addition mechanism is designed to nestle into an opening in the body of the multifunctional exercise ball. The fluid addition means includes a first valve for admitting air into the rubber pump body which cooperates with a second valve for admitting air into the

interior of body.

[0013] The above mentioned prior art documents disclose exercise bag or ball provided with funnel, valves plug to empty and/or to fill the bag or ball with fill material or pressurized fluid.

[0014] None of the above mentioned prior art documents disclose or suggest a ball means having a spherical coating means and comprising at least one vent means applied to the coating means and assigned to allow an air flow from the inside of the coating means to the outside to dissipate an amount of energy generated by an impact of the ball means against an object as provided by claim 1.

[0015] One drawback of such known hand weights consists in that they are of rigid material and if they escape to the grip of the user, can cause damages to persons and things thus being dangerous.

[0016] One object of the present invention is to propose a modular exerciser device usable as body or ball without rebound and safe for the users.

[0017] Other object is to propose a device having adjustable weight in the production phase or subsequently, also in the site of utilization.

[0018] Further object is to propose a device which allows to perform exercises in which is required a tire and a club but safe for people and things and that it is easily usable both by novices or by debilitated persons, and also by experts and by people with high degree of training.

[0019] Other object is to propose a device usable as a hand weight but that it is safe for people and things.

[0020] Further object is to propose a modular and configurable type exerciser device without rebound to allow a user to perform a wide range of different gymnastic and rehabilitative exercises.

[0021] The characteristics of the invention are highlighted in the following with particular reference to the accompanying drawings in which:

- Figure 1 illustrates a cross-sectional view of the exerciser device without rebound object of the present invention;
- Figure 2 shows partial and enlarged views of two details of Figure 1;
- Figure 4 illustrates a sectional view of a variant of the device of Figure 1;
- Figure 5 shows a longitudinal sectional and exploded view of a handle means of the device;
- Figure 6 shows a sectional view of the handle means of Figure 5 assembled to the device of Figure 4;
- Figure 7 illustrates a sectional view of the device of Figure 4 to which has been assembled a handle means.

[0022] With reference to figure 1, numeral 1 indicates the exerciser device without rebound object of the present invention comprising a ball means 2 provided with a spherical shaped coating means 3 and with one

or more vent means 5 applied to the coating means 3.

[0023] In alternative the invention provides that the ball means 2 and the shaped coating means 3 can be shaped in different manner, for instance as a rugby ball or like an hollow disk for barbell.

[0024] Preferably the ball means comprises two vent means 5 assigned to put in flow communication the interior of the coating means 3 with the outside.

[0025] The device comprises, for each vent means 5, a corresponding seat means 7 to house in irremovable or removable manner the respective vent means 5.

[0026] Each seat means 7 is in a irremovable manner fixed to the coating means 3, for example through co-fusion, gluing or irremovable mechanical fastening.

[0027] Each housing means 7 has a respective passage, for example of cylindrical shape, having a first predetermined maximum transverse dimension, or diameter, and each vent means 5 is provided with a set of through holes having a second predetermined maximum transverse dimension. In particular, the first predetermined maximum transverse dimension can range from one-fiftieth to one-tenth of the diameter of the ball means 2 and the second predetermined maximum transverse dimension can range from one-fifth to one-fortieth of the first predetermined maximum transverse dimension.

[0028] The invention provides that the inside of the coating means 3 of the ball means 2 can be filled, at least partially, with a filler 8 comprising at least one among fragments of elastic material preferably recovered from the processing of the exercise equipment, pieces of open or closed cell spongy material, also preferably of recycled kind, and ballast means, for example consisting of metal balls. The maximum dimensions of each of the fragments of elastic material, pieces of open cell or closed cell spongy material and ballast means are smaller or reducible to less than said first predetermined maximum transverse dimension and are larger than said second predetermined maximum transverse dimension. This allows to insert the bulk elements of the filling 8 through the passage of the seat means 7. It is provided that the filling is not completely packed and that it is made so as to allow the passage of air between the elements of such filling until the vent means. It is also provided that the elements of the filling 8 are partially bonded, for example by a glue, by a bonding or viscous material such as a permanent fluid adhesive, so as to connect them to each other without, however, occluding the interstices for the air.

[0029] The coating means 3 of the ball means 2 is made of flexible and not extensible material or of flexible and elastic material having one or more layers.

[0030] Alternatively the invention provides that the ball means 2 is empty and that the coating means 3 is of flexible and elastic material, also in this case having more layers or one only, said elastic material has physical characteristics and thickness to make the device self-supporting or rather able, in absence of external forces, to maintain its spherical shape.

[0031] The operation of the device provides, for exam-

ple, the use of the ball means 2 as medical ball, as object for throwing or for taking, as support for the feet or other body parts, alone or with other tools in an almost infinite combination of exercises.

[0032] The device 1 of the variant of Figures 4-7 comprises a housing means 10 for a connection means 11 of a handle means 12, 14.

[0033] The housing means 10 comprises a through hole passing through the ball means 2 and may be obtained directly through the coating means 3 and through the filling 8, or, as shown, may comprise a tubular element, for example, in flexible and elastic material, which passes through the ball means crossing the center of the latter and which delimits said through hole.

[0034] The through hole of the housing means 10 has a shape complementary to that of the connection means 11. A free end of the connection means 11 bears a nut screw 16 for a screw means 18 for fixing a flange means 20 assigned to abut with the ball means 2 close to one end of the through hole in the housing means 10. Preferably, the flange means 20 it is of flexible and elastic material and can be partially or completely contained in a respective recess of the ball means 2.

[0035] The connection means 11 also comprises a bushing means 22, lockable for example by means of a grub screw, along the handle means 12, 14 in, direct or through an elastic crown means 24, abutment with the ball means 2 near one end of the through hole of the housing means 10 opposite to the flange means 20.

[0036] The handle means 12, 14 comprises a handle rod 25 or a handle 27 that incorporate part of the connection means 11. The handle rod 25 can be made of metal, wood or composite material, preferably in resin matrix carbon fiber; the handle 27 is preferably made of metal or synthetic material.

[0037] The operability of the device equipped with the handle rod 25 provides, for example, that it is operated by a person to hit a wall or a floor, silhouette, objects and targets even with movements similar to those of the exercises carried out with the tires and clubs but without the risks and dangers that they involve, especially without damages in case of aiming and usage errors.

[0038] The operability of the device provided with a handle 27 may be of the same type as that of the metal hand weight but, unlike of the latter, it can be launched and/or to abut with the body without risks.

[0039] The vent means 5 reduce or eliminate the rebound of the device probably because in a crash or impact condition of the ball means 2 against an object, person or other element, the vent means 5 allow a respective air flow from the inside of the coating means 3 toward the outside. Could be that the kinetic energy, vortex and other dissipative phenomena of the air flow draw an amount of energy of said crash or impact. Furthermore the air flow through the vent means 5 avoids that the air inside the ball means 2 can increase pressure accumulating energy.

[0040] It is also observed that the vent means 5 ad-

vantageously increases the length of time of the impact and reduces the peak value of the negative acceleration during said impact.

[0041] Optionally the invention provides that the vent means 5 are of replaceable kind and that they are provided with respective set of through holes having respective total transverse dimension. This provision allows the replacement of the vent means 5 to change the total section area for the air flows passage so changing the behaviour of the device during the collisions and in particular the rebound damping.

Claims

1. Exerciser device without rebound comprising a ball means (2) having a coating means (3) of spherical shape and **characterized by** comprising at least one vent means (5) applied to the coating means (3), said at least one vent means (5) put the inside of the coating means (3) in flow communication with the outside; in a crash or impact condition of the ball means (2) against an object, person or other element, the at least one vent means (5) is assigned to allow an air flow from the inside of the coating means (3) toward the outside reducing or eliminating the rebound of the device.
2. Device according to claim 1 **characterized in that** it comprises at least one seating means (7) each one for housing in fixed or detachable manner a respective vent means (5); where each seating means (7) is irremovably fixed to the coating means (3).
3. Device according to claim 2 **characterized in that** each seating means (7) has a respective passage having a first predetermined maximum transverse dimension, and that each vent means (5) is equipped with a set of through holes (6) having a second predetermined maximum transverse dimension.
4. Device according to claim 3 **characterized in that** the inside of the ball means (2) is at least partially filled with at least one between elastic material fragments preferably recycled, pieces of open cell or closed cell spongy material and ballast means, where the maximum size of each of the elastic material fragments, pieces of spongy material with open cell or closed cell and ballast means are minor or reducible to less than said first predetermined maximum transverse dimension and are greater than said second predetermined maximum transverse dimension.
5. Device according to claim 4, **characterized in that** the coating means (3) is in flexible not extensible material.

6. Device according to any of claims 1 - 4 **characterized in that** the coating means (3) is in flexible and elastic material.
7. Device according to claim 6 **characterized in that** the physical features of said material of the coating means (3) and the thickness thereof are such as to make the device self-supporting or rather able, in the absence of external forces, to maintain its spherical shape even if empty. 5
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8. Device according to any of the previous claims **characterized in that** the ball means (2), of one or more layers type, comprises a housing means (10) for a connection means (11) of a handle means (12, 14). 15
9. Device according to claim 8 **characterized in that** the housing means (10) comprises a through hole through the ball means (2) having shape complementary to the connection means (11) whose free end bears a nut screw (16) for a screw means (18) for fixing a flange means (20) assigned to abut with the ball means (2) in proximity of an end of the through hole of the housing means (10); the connection means (11) further comprises a bushing means (22) lockable along the handle means (12, 14) in abutment with the ball means (2) in proximity of an opposite end of the through hole of the housing means (10) directly or through a crown means (24). 20
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10. Device according to claim 8 or 9, **characterized in that** the handle means (12, 14) comprises a handle rod (25) or a handle (27). 35
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FIG.1

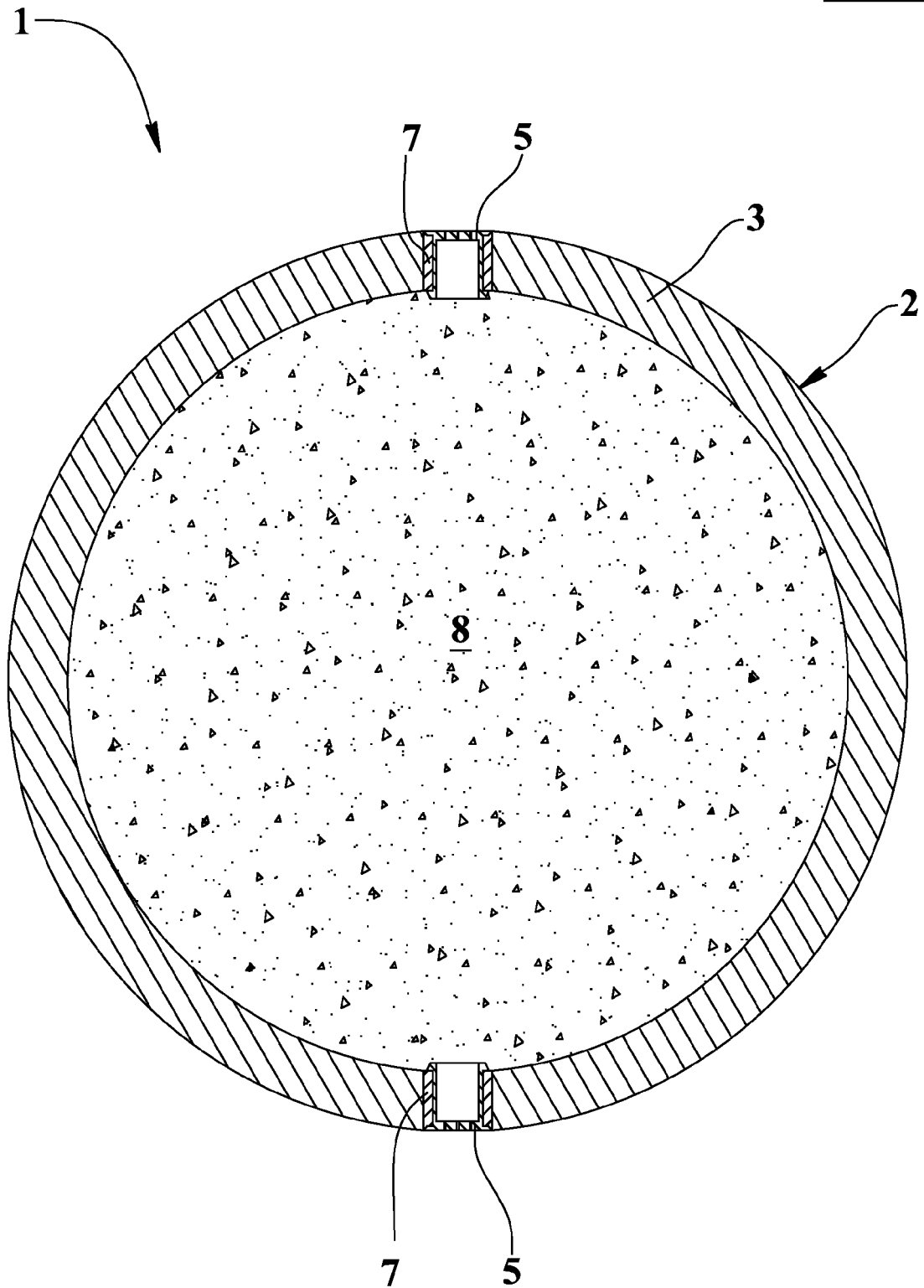


FIG.2

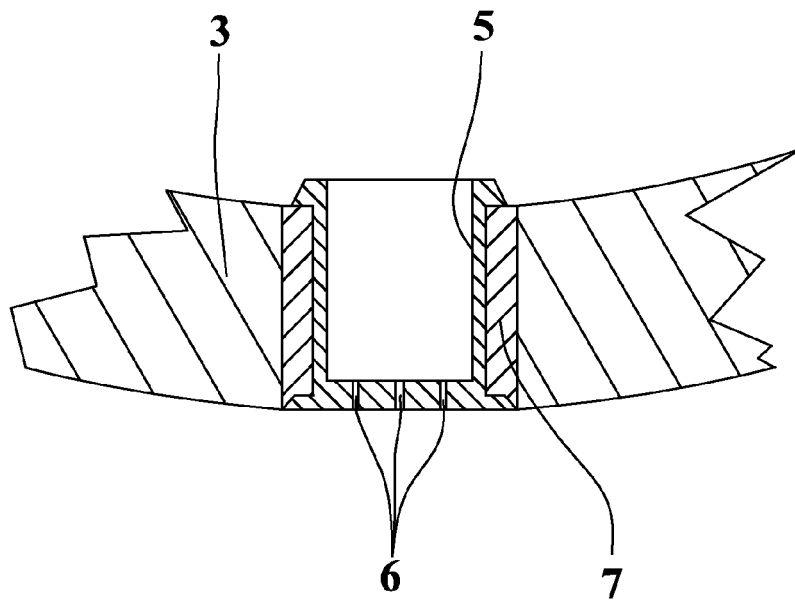
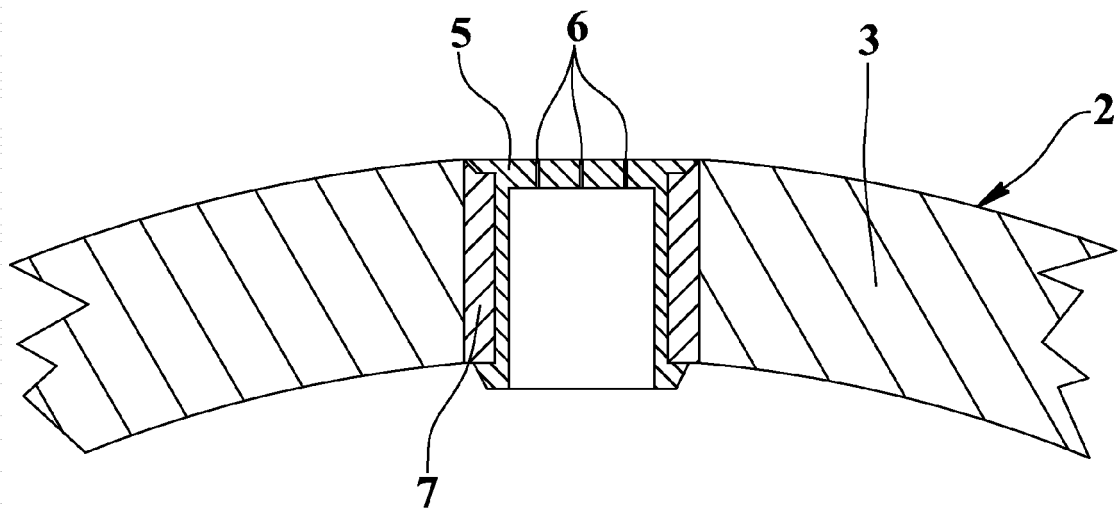


FIG.3

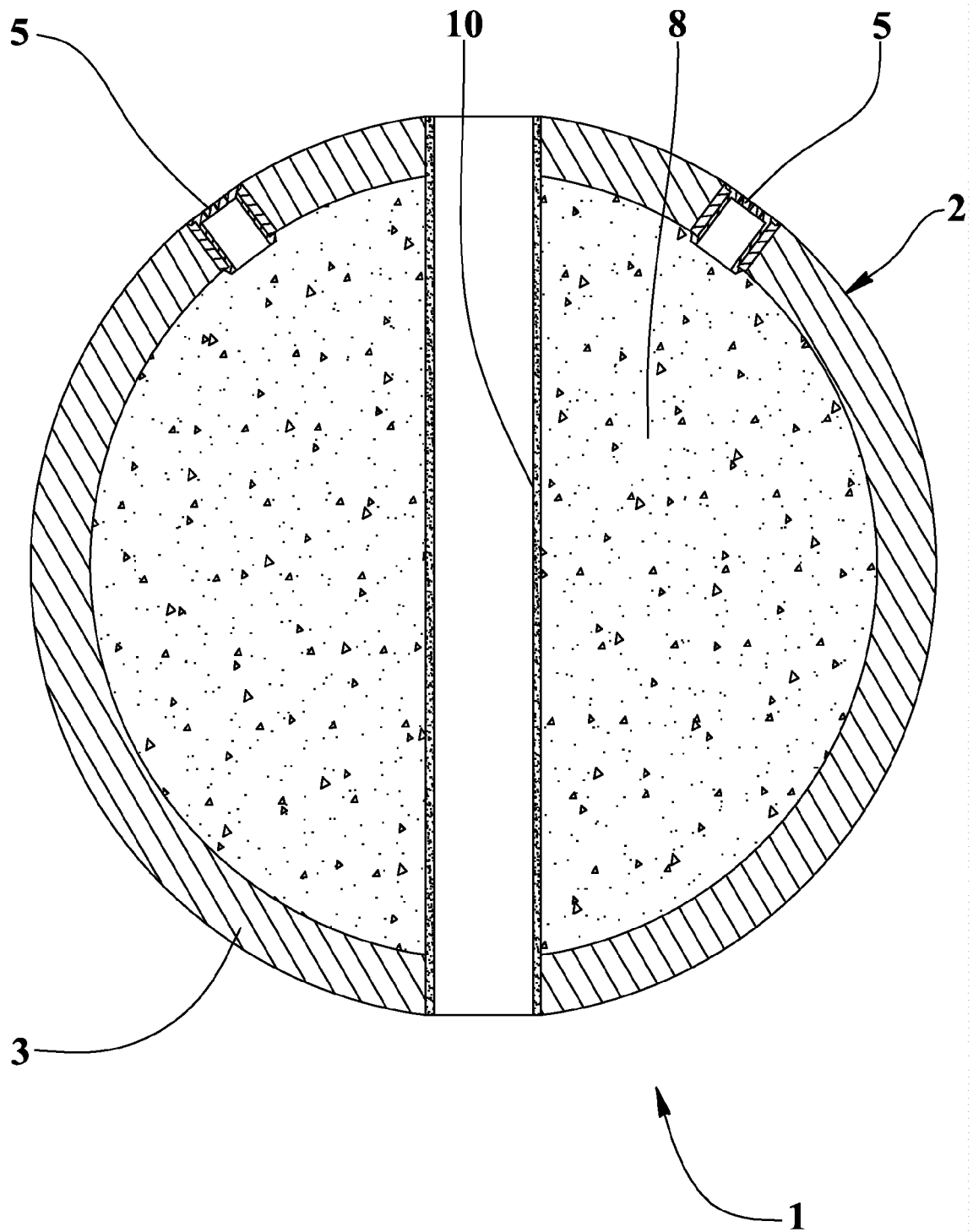


FIG.4

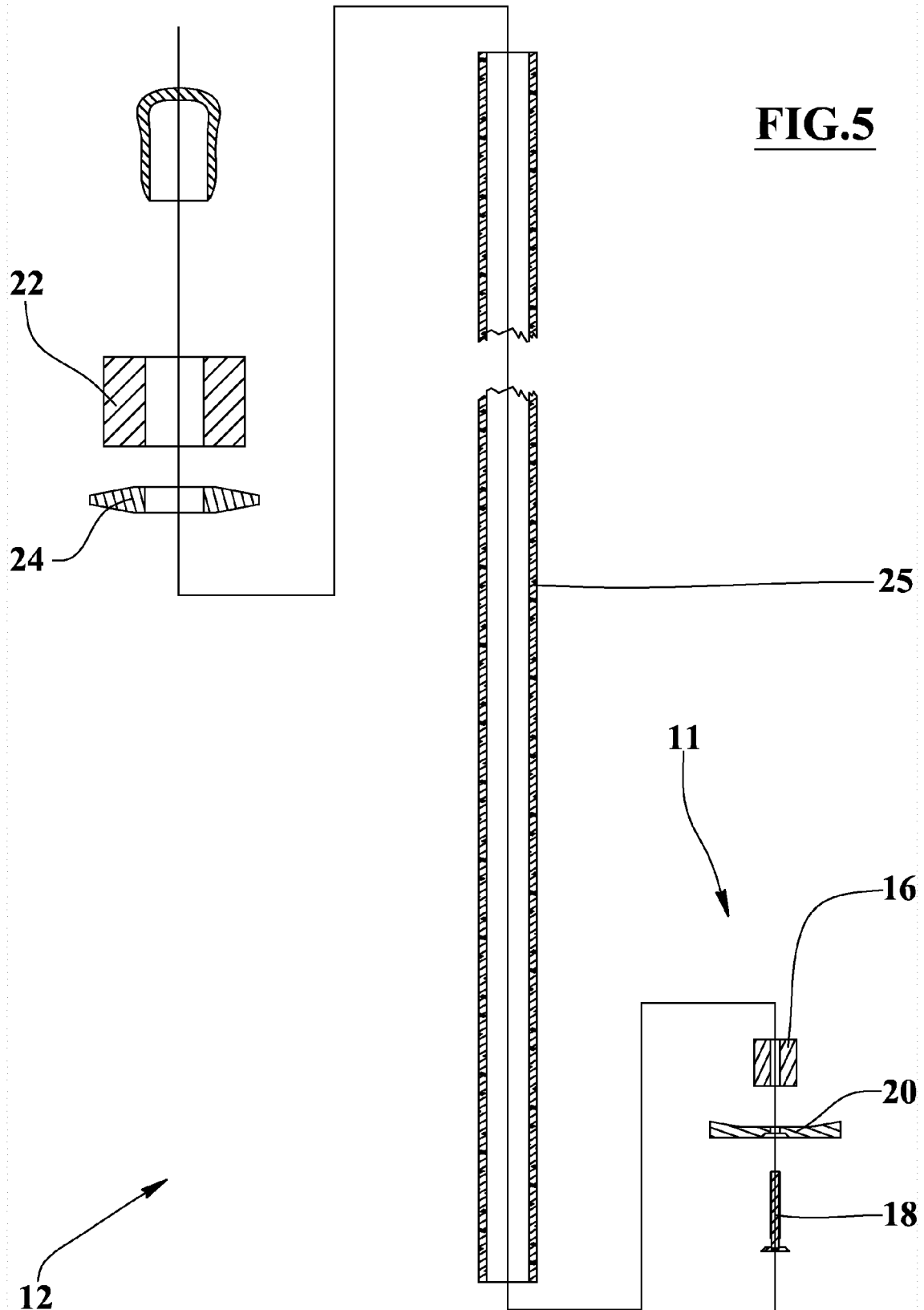
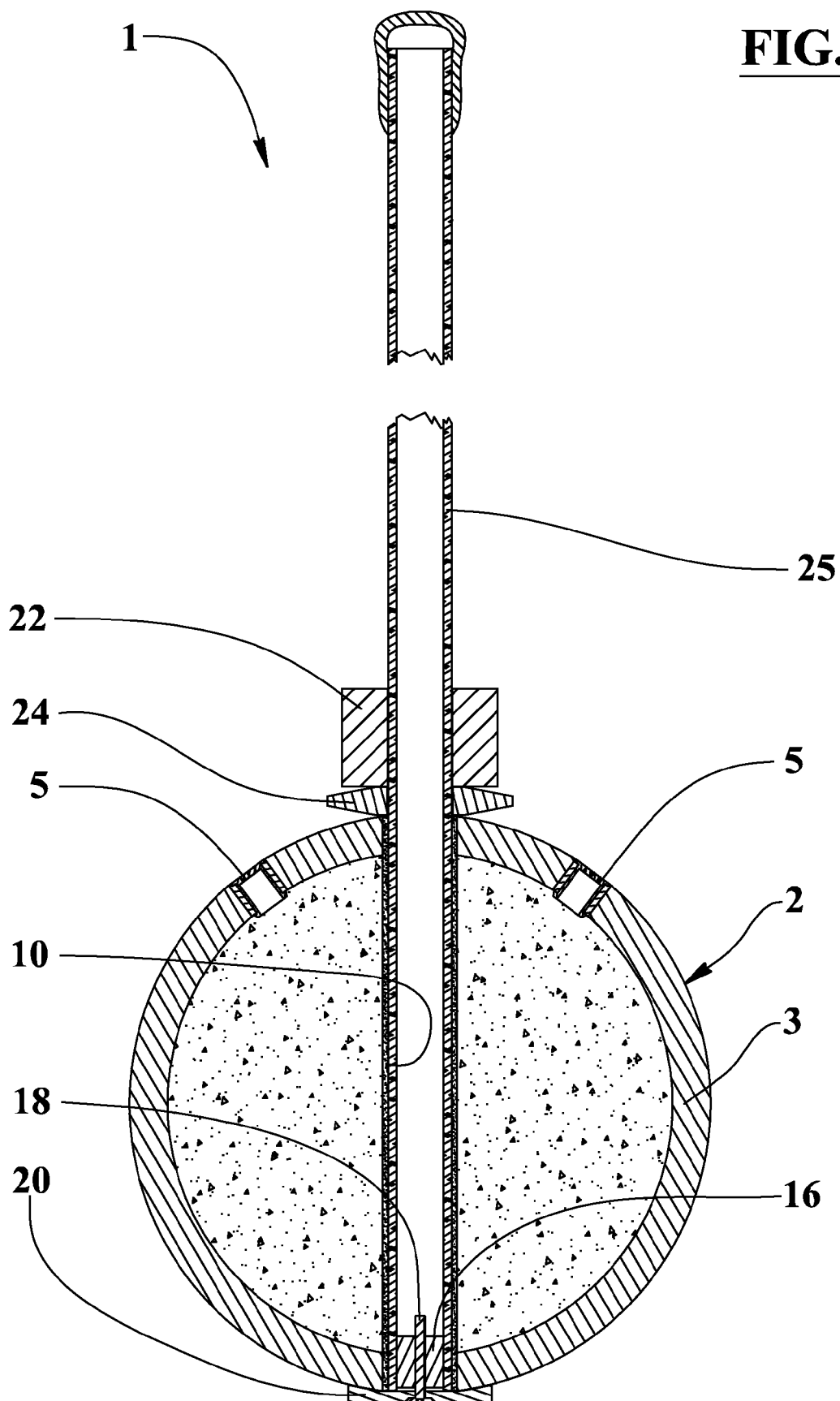


FIG.6



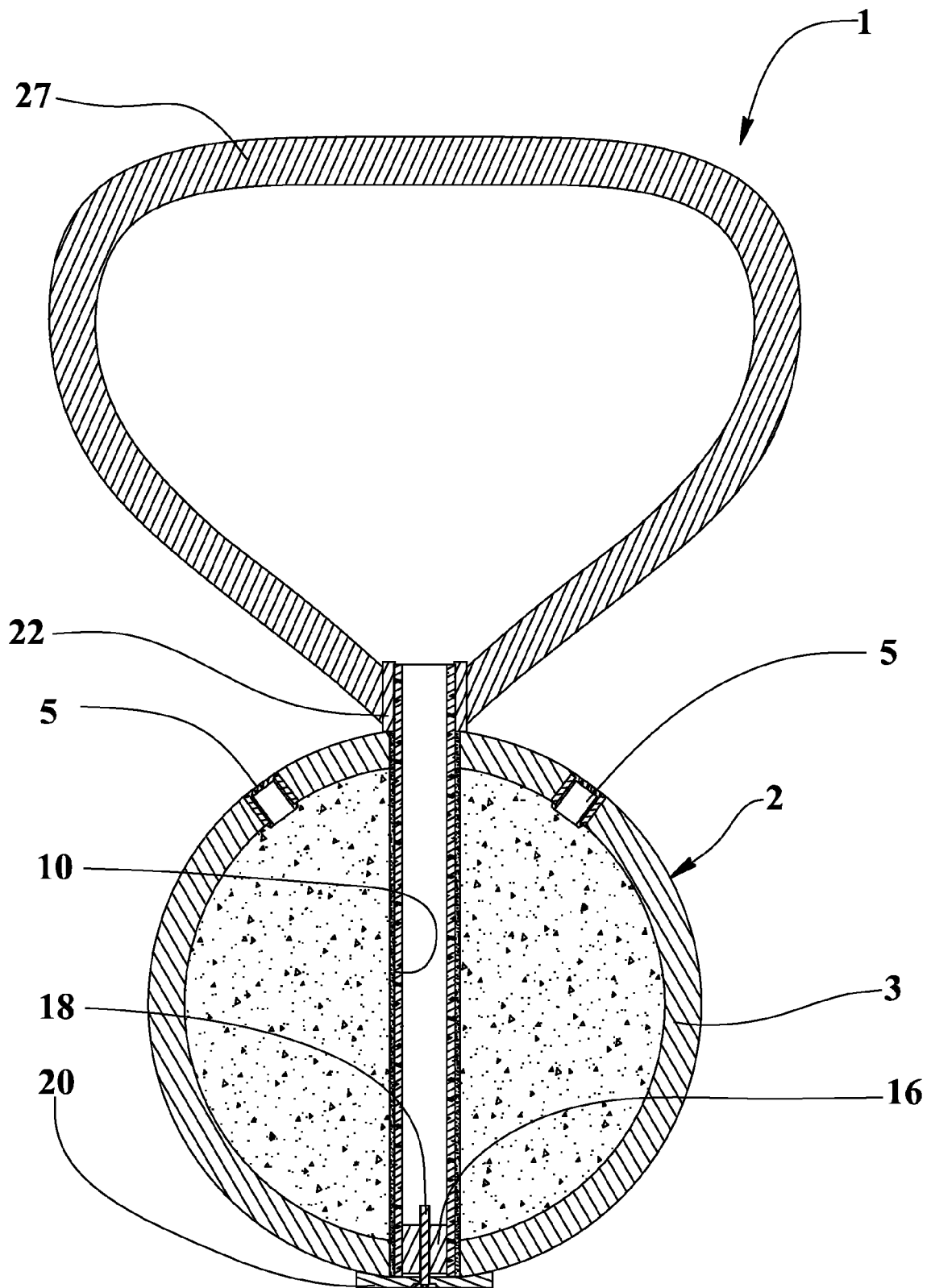


FIG.7



EUROPEAN SEARCH REPORT

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 4 February 2016	Examiner Borrás González, E
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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