The invention is a velocipede provided with quite long pivoting levers, which, at the end, have footrests (7), rigidly fastened, suitably inclined (6), which are the seat for the feet of the rider who in the upright posture moves the legs and feet as he/she is walking uphill. In order to permit such movement, the levers are suitably arranged such that said footrests follow a path with a convexity faced towards the ground and the front wheel. Each pivoting lever, being long, between the footrest (7) and the fulcrum, has a reinforcing structure, on which a series of tracks (1) with different curvatures are obtained, which are travelable, one at a time, by a roller (11) supported by a pin (10) that can be placed into one of the threaded holes obtained on a crank arm (4). The invention has two rollers, one for each crank arm (4), which stressed in turns by the levers during the alternate oscillations, rotate the crank arms (4), which joined at 180° one from the other one by means of an interposed spindle, allow in turn the rollers (11) to coordinate and limit the oscillations. On said spindle a sprocket wheel is splined which, meshed by a drive chain, causes the rear wheel to rotate. Each track (1), cooperating with the roller (11), is different in its different manner for supplying driving power with the effort made by the rider being equal. The invention is only human powered and if it is equipped with a well-arranged suitable steering member, increases its performances. It is a optimal means of transport and it can be used also for performing agonistic and amateur sports activities. By adapting it, it can be a valid instrument for exercises and by applying a generator it can be also used for producing energy.
The present invention relates to a velocipede, particularly a velocipede intended to be ridden with the rider in the upright posture.

Velocipedes or bicycles known in the prior art always provide a sitting and a posture with the rider leaning forward, extending the back, in order to reach the handlebar.

However such position is disadvantageous if considering that the weight force of the body cannot be exploited for driving the vehicle.

The weight is discharged on the saddle and even in the case where the cyclist stands up for exploiting such force, the frames known in the prior art are made such that the centre of gravity of the body is in a position forward of the pedals, therefore the exploitation of the weight force is not optimized.

A possible solution is described in the document US 8,220,814 where a bicycle without the saddle is disclosed which is intended to be ridden in the upright posture, such that a movement intended to mimic steps allows the vehicle to be propelled.

However the driveline of the bicycle described in the mentioned document is made in such a way to force the rider to adapt its own pace to the particular configuration of the driveline without the possibility of changing his/her own pace.
Moreover the posture of the rider is such that the movement of the legs mimics the stepping motion in one place thus causing the leg muscles to rapidly wear out.

Therefore there is the unsatisfied need from prior art known devices of providing a velocipede allowing described drawbacks of prior art known bicycles to be solved.

The present invention achieves the above aims by providing a velocipede comprising a propelling unit composed of two pivoting levers, each lever being provided, at one end, with a footrest, at the other end with a fulcrum, and in the middle, with a reinforcing structure on which a series of tracks with different curvatures are obtained, which can interact with a roller.

Moreover there are provided pins supporting the rollers, placed on crank arms which, joined and staggered one another at 180° by means of an interposed spindle, rotate due to the alternate oscillations of the levers that urge in turns the rollers, which in turn coordinate and limit such oscillations, a sprocket wheel meshing with a drive chain and causing the rear driving wheel to rotate being splined on the spindle.

Moreover the velocipede comprises a supporting frame composed of:

a) seats for holding the rear driving wheel;

b) a steering fork for the front wheel, connected to a suitable steering member;

c) stable footboard (9);

d) hub (12), that by means of ring nuts and
bearings houses inside it the spindle that supports the crank arms (4);

e) pivots (5) acting as a fulcrum for the pivoting levers, there being provided at the end of each lever a footrest (7) with a suitable inclination (6) which is permanent even during the oscillations.

As it will be clear from some shown embodiments the velocipede of the present invention allows the exploitation of the weight force of the rider to be optimized as a force for propelling the velocipede itself.

Further characteristics of the velocipede of the present invention are the object of the subclaims.

These and other characteristics and advantages of the present invention will be more clear from the following description of some embodiments shown in the annexed drawings wherein:

FIG. 1: a side view of the velocipede of the present invention according to a possible embodiment;

FIG. 2: a rear view of the velocipede of the present invention according to a possible embodiment;

TAB 3: a side view of the velocipede of the present invention according to a further embodiment.

The surface used for showing the drive chain is pointed out in black.

In FIG. 1, in order not to overload the drawing with details and in order to make it more clear, the tracks of the lever behind the supporting frame have not been pointed out. The steering member has not been pointed out since many models can be suitable. The
rider has been shown in order to demonstrate approximately the type of movement made by the legs and feet with a wide oscillation of the levers. The inclination 6 is the angle between the footrest 7 and an axis passing by the base thereof and by the fulcrum 5. In FIG. 2, the upper and lower sides of the footrests have been denoted by 7 and 7A respectively, in order to point out the fact that the arrangement of the levers is the same throughout all the figures.

With a particular reference to figure 3, it is specified that the lever placed behind the frame has been highlighted with broken lines in order not to obstruct the conformation of the lever in the foreground. A black area near the inner surface of the track IE has been denoted by number 13, which will be mentioned below in order to set forth some concepts.

The invention is a velocipede provided with pivoting levers, at their ends they have footrests 7 rigidly fastened, suitably permanently inclined 6, which are the seat for the feet of the rider who in the upright posture moves the legs and feet as if he/she is walking uphill. In order to permit such movements, the levers alternately oscillate in order to simulate the sequence of steps, and they are suitably arranged such that such footrests, during the oscillation, follow a path with a convexity faced towards the ground and the front wheel, with suitably distributed portions. These last parameters define the slope of the "uphill" walk mentioned above.

Unlike already existing velocipedes with pivoting
levers, which force the rider, even if in the upright posture, to move the legs such to mimic the walk on the place thus causing the leg muscles to rapidly worn out, on the contrary in the invention the movement of the lower limbs is natural and physiologically correct and it allows the exercise to continue even for a long time.

In conventional bicycles it is not possible to stand upright for a long time since our muscles are not genetically formed for allowing the feet to follow circular paths. In fact "man" has pedaled for one hundred years, on the contrary he has walked and run for millions of years. The mentioned path, followed by the footrests 7, dependent on the position of the pivots 5 that act as a fulcrum and on the position of the spindle of the crank arms 4, is of primary importance, since it allows the velocipede to be propelled forward even if it is not provided with the drive chain. Therefore the invention is propelled forward by the combination of the effects of two processes. One is due to the transmission of the rotation to the driving wheel and the other one is due to the dynamic geometry of the footrests 7, and above all of the weight thereon, interacting with the rest of the velocipede. This second process is not exploited by any currently known velocipede equipped with pivoting levers and nor by the traditional bicycles that, since having a circular path of the pedals that are subjected to the weight force, causes an overall null result by the sum of the partial effects obtained by homogeneous
sections of curves composing the path.

Such arrangement of the levers and footrests 7 allows the rider to have natural movements of the legs and feet, when he/she is intent on transferring the body weight from one footrest 7 to the other one for generating driving power and, above all, it allows all the weight of his/her own body to be used for such purpose. This last characteristic in velocipedes or in bicycles currently on the market is absent since they are provided with a saddle that supports a part of the weight of the rider and he/she is obliged to take such positions that he/she is forced to transfer some other weight on the handlebar. The invention does not provide the saddle and it forces the rider, depending on the postures he/she can take, to distribute all his/her weight only on the footrests 7, figures 1 and 3. This last concept demonstrates that any steering members, suitably mounted on the invention, will not have to support any parts of the weight of the rider but on the contrary, if it is ideal, it can increase the performances of driving power supply and drivability.

It is essential for the footrest 7 to be at an appropriate distance from the fulcrum 5, as it is inclined 6 and travels the path mentioned above. Precisely, if the footrest 7 has to be the support for the rider's foot, it has to allow him/her to naturally and comfortably rotate the ankle, and at the points of the path where the footrest 7 reaches the maximum inclination values, with respect to the horizontal plane, due to the oscillation, it has to guarantee the
stability of the whole body and in order to obtain it
the levers have to be quite long, figures 1 and 3.

Such levers, since they are long, between the
footrest 7 and the fulcrum 5 are equipped with a
reinforcing structure on which five tracks 1 with
different curvatures are obtained, which are travelable
one by one by a roller 11 that drags the pin 10
supporting it and this latter in turn rotates a crank
arm 4, it being connected thereto. The pivoting levers
urge in turn the two rollers 11, one for each crank arm
4, and consequently they rotate the sprocket wheel
splined on the spindle that, at the end, keeps the
crank arms 4 staggered one another at 180°. The rollers
11, making a closed circular path, in turn coordinate
and limit such oscillations. Such sprocket wheel meshed
by the drive chain, causes the rear driving wheel of
the velocipede to rotate.

This wide length, allows the pivoting levers to
reach high torque values that lead to oversize said
sprocket wheel, such as shown in FIG.1, with a
consequent increase in the driving power.

From what just described it is clear how the shape
and number of the tracks formed in the supporting
structure is important for changing the travelling mode
of the velocipede.

For this reason advantageously the tracks 1 are
classifiable on the basis of the width and orientation
of their concavity, these tracks going from a track
with a concavity completely faced towards the front
wheel to a track with the concavity faced towards the
It is specified that it is possible to provide several tracks different as regards shape, concavity and radii of curvature, interposed between the two tracks placed at the extremes, which are characterized by having an opposite concavity and radii of curvature with a dimension very close to the radius of the path travelled by the respective roller 11.

According to the variant shown in figure 1, the five tracks 1 can provide to the velocipede different travelling conditions and they have been classified according to their curvature and explicitly on the basis of the orientation and width of the concavity. Specifically: front IA; slight front IB, absent (straight travelling) IC; slight rear ID; rear IE. This order of exposition corresponds to how the tracks are arranged in the reinforcing structure of the pivoting lever, and it shows also the progressive course of the gradual change in the driving power supply.

Obviously it is possible to provide any number of tracks of any shape, figure 1 has to be considered merely as an illustration for better understanding the inventive concept of the present invention and it has not to be considered as limiting it.

Each track 1 if travelled by a roller in a complete turn on the circular path thereof, causes the driving power with a different course to be supplied with the effort made by the rider being equal, or vice versa, some tracks 1 require, for advancing the lever, a more rapid displacement of the total weight of the
rider. This leads to a power increase that results in a higher driving power supply. This is useful since the rider can select the tracks 1 that have to cooperate with the rollers depending on the energy he/she wants to exert and on the type of ride he/she wants to have. The track 1 can be selected by placing, by screwing it, the end of the pin 10 supporting the roller, into one of the threaded holes obtained on the crank arms 4 selected in a position compatible with the track 1 to be used. Tracks 1 in the direction where the roller 11 rolls, have suitable curves that are generated by suitable radii and centers of curvature. This last condition points out the importance of the accuracy of the widths of such arcuate shapes, and of their exact position, in order to accomplish many functions that will be mentioned below.

According to a possible embodiment, it is possible to provide at least one track of said series of tracks, along its extension, to have a variable radius, such to define a path that is not necessarily circular.

The roller, as already said, limits the oscillations of the corresponding lever; this leads to the fact that the pin 10, in any threaded hole it is placed, acts as a stop, that stops the travels of the lever when it reaches the maximum extension width. This points out that, by placing said pin in different threaded holes, consistently with the selected track, we obtain different maximum oscillation widths of the levers with the consequent effects of changing the maximum inclination with respect to the horizontal
plane of the footrests 7 and the maximum distance of the latter. This last characteristic implies, practically, the change of the rider stride.

According to one embodiment the velocipede of the present invention provides that the lever, it being long and arranged in a suitable manner with respect to the spindle of the crank arms 4, generates on the roller 11 quite high stresses that characterize the dimensions of the sprocket wheel splined on the spindle, that is the diameter of such wheel is proportional to the intensity of said stress.

As described above, the rollers 11 can perform a rotational movement on themselves, that allows them to slide along the tracks 1.

Particularly the external surfaces of the rollers travel on the inner surfaces of the tracks from a starting end-of-travel point to a final end-of-travel point.

Thus the path of the roller is divided into two well specific phases, a first phase, the active phase, wherein the roller 11 is subjected to the stress of the lever and wherein the driving power is generated and a second phase, the passive phase, wherein the roller 11 drags the lever to the starting position.

If the system is optimally designed, the two phases at their ends overlap generating “mixed” phases characterized by being contemporaneously active and passive.

Consequently the roller 11, when rolling on the inner surface of the tracks, depending on the type
phase it is passing through, ideally divides the track into active, passive or contemporaneously as active and passive, namely mixed.

With a particular reference to figure 1 and to figure 3 the active part is composed of the lower half of each track, while the passive part is composed of the upper half of each track.

With a particular reference to figure 3, the rollers have only just travelled in the mixed surfaces 13, of the tracks, of the respective levers and immediately after they will travel in surfaces of different kind. The roller interacting with the lever placed behind the frame, will travel on the active surface of the track IE and contemporaneously the roller that is in the hole 2 of the crank arm 4, interacting with the lever in the foreground, will travel in the passive surface of the track 1A.

The levers, being equal to one another, have the mixed surface placed inside the tracks located in the same position.

From what described above it results that the roller 11 by travelling in the active parts of the several tracks 1A to IE, generates driving power intensity supplies, with a gradually progressive course, while by travelling in the passive parts of the several tracks 1A to IE, it generates different stresses on the driven lever, with a gradually progressive course.

The threaded holes provided on the crank arm 4 depending on their positions can also have other
purposes. Five of them are placed at the outermost end of the crank arms, suitably arranged at the locations of the five tracks, such that the pin supporting the roller, acts as a stop, thus stopping the descending travel of the lever and contemporaneously preventing the footrest from going beyond the line of minimum distance from the ground, figures 1 and 3.

The other threaded holes provided on the crank arms can only vary the maximum width of the oscillation of the levers.

The roller with its pin, even if used by any track, an interval before reaching the stop position that stops the descending travel of a lever, moves the longitudinal axes of the crank arms past the position wherein they are orthogonal to the straight line tangent in the contact point between the roller and the track belonging to the alternative lever.

Therefore the roller, before reaching the exclusively active surface, travels in the passive one and once said orthogonality point is passed, it will travel, for a section, in a contemporaneously active and passive mixed surface, in figure 3 arranged at the point of inflection of the curve identified by tracks A and E.

Since the orthogonal arrangement mentioned above is not able to supply driving power as it has a null torque, it has been bypassed. Therefore the invention has such a technical arrangement that the two levers have never a null torque condition overall, unlike
traditional current bicycles.

Advantageously immediately after a lever is in the position where the orthogonality condition occurs and till the descending travel of the other lever stops, the levers pivot in the same direction, that is both of them will follow a descending travel.

In this case both the levers produce driving power, where the intensity will depend on how the weight of the rider will be distributed on the footrests 7.

The rollers travel on the mixed surfaces 13 of the respective levers contemporaneously, causing both the levers to go in a descending travel. The rider, when feels both the lever going down, has the indication that he/she can completely transfer his/her weight on the footrest placed at a higher level.

In the invention a fixed footboard 9 has been provided, interposed between the paths of the pivoting levers, useful for starting in case of standing starts and for downhill rides.

Figure 3 shows a further embodiment of the velocipede of the present invention, particularly an embodiment intended to disclose a possible variant embodiment of the tracks 1.

The operation of the velocipede and of the propelling unit is the same as the one described above, but in this case the track 1 has not a single radius of curvature, but it is composed of two different sections, alternating on the basis of the convexity, with reference to the rear wheel.
Therefore a lower section IE, corresponding to the active part and an upper section IA corresponding to the passive part are shown.

Even in this case it is possible to provide any number of tracks, which have the same "S" shape, but having different radii of curvature.

With a particular reference to tables 1 and 3 the tracks 1 have, in the direction where the roller 11 rolls, suitable curves that are generated by radii with a higher width than the radius of the path travelled by the roller 11 and, if the difference in the dimensions of said radii is small, the different power supply developed in a complete turn of the path of said roll is enhanced.

With particular reference to figures 1 and 3 the passive surfaces are those present in the portions of the tracks placed above the threaded holes 2 on the contrary the mixed ones and the active ones are placed under them. Obviously the mixed ones are the continuation of the passive ones. In figure 3, on the levers or specifically on the lever placed behind the frame, the point of inflection provided in the curve of the track acts as a partition of the active and passive surfaces.

The invention is an optimal means of transport with high performances and it allows the rider to take an ergonomic posture and to make natural movements that permit a prolonged use. It can be used both for agonistic and not agonistic activities. Since it is exclusively human powered it is obviously ecologic and,
by adapting it, it can be a good gymnastic product to be used within in-door facilities, for reproducing the running movement of the rider, avoiding the problems it involves if performed on the ground or on the treadmill. By applying a generator thereto it can produce also energy.
CLAIMS

1. Velocipede composed of a propelling unit characterized in that said propelling unit is composed of two pivoting levers, of which levers each is provided, at one end, with a footrest (7), at the other end with a fulcrum (5), and in the middle, with a reinforcing structure on which a series of tracks (1) with different curvatures are obtained, which can interact with a roller (11),

there being provided pins (10) supporting the rollers (11), placed on crank arms (4) which, joined and staggered one another at 180° by means of an interposed spindle, rotate due to the alternate oscillations of the levers that urge in turns the rollers (11), which in turn coordinate and limit such oscillations, a sprocket wheel meshing with a drive chain and causing the rear driving wheel to rotate being splined on the spindle, there being also provided a supporting frame composed of:

a) seats for holding the rear driving wheel;

b) a steering fork for the front wheel, connected to a suitable steering member;

c) stable footboard (9);

d) hub (12), that by means of ring nuts and bearings houses inside it the spindle that supports the crank arms (4);

e) pivots (5) acting as a fulcrum for the pivoting levers,

there being provided at the end of each lever a
footrest (7) with a suitable inclination (6) which is permanent even during the oscillations.

2. Velocipede according to claim 1, wherein the fulcrum of the levers composed of the pivots (5) and the spindle of the crank arms (4), are at suitable locations on the supporting frame such that the footrest (7), during the oscillations, follows a path with a convexity faced towards the ground and the front wheel, with suitably distributed portions.

3. Velocipede according to claims 1 and 2, wherein the footrest (7), it being inclined (6), following said path and acting as a stable seat for the foot of the rider, is characterized by being at a suitable distance from the fulcrum (5), that is, the pivoting lever is quite long.

4. Velocipede according to one or more of the preceding claims, wherein each pivoting lever, it being long, is provided with a reinforcing structure on which said tracks (1) are obtained.

5. Velocipede according to claim 1, wherein said tracks are classifiable on the basis of the width and orientation of their concavity, said tracks going from a track with a concavity completely faced towards the front wheel to a track with the concavity faced towards the rear wheel.

6. Velocipede according to one or more of the preceding claims, wherein the roller (11) cooperating with one of said tracks (1), is supported by a pin (10) whose end can be screwed into a suitable threaded hole, selected among those obtained on the crank arm (4) and
compatible with the track (1) to be used.

7. Velocipede according to one or more of the preceding claims, wherein the lever, it being long and arranged suitably with respect to the spindle of the crank arms (4), generates on the roller (11) quite high stresses that characterize the dimensions of the sprocket wheel splined on said spindle, that is the diameter of such wheel is proportional to the intensity of said stress.

8. Velocipede according to one or more of the preceding claims, wherein said tracks (1) when travelled by the roller (11), one by one, generate different driving power intensity supplies, with a gradually progressive course.

9. Velocipede according to one or more of the preceding claims, wherein the tracks (1) in the direction where the roller (11) rolls, have suitable curves that are generated by suitable radii and centers of curvature.

10. Velocipede according to claim 9, wherein at least one of said tracks along its extension, has a radius with variable dimensions.

11. Velocipede according to one or more of the preceding claims, wherein the footrests (7), during the oscillations of the levers, do not go beyond the line of minimum distance from the ground (8), there being provided on the crank arm (4), at suitable positions, at the respective tracks (1), corresponding threaded holes (2) that allow the pin (10), supporting the roller (11), to act as a stop that stops the descending
travel of the lever.

12. Velocipede according to one or more of the preceding claims, wherein the pin (10), arranged on the crank arm (4) in a suitable position for using any track (1), an interval before said position wherein it acts as a stop that stops the descending travel of a lever, moves the longitudinal axes of the crank arms (4) past the position wherein they are orthogonal to the straight line tangent in the contact point between the roller (11) and the track (1) belonging to the alternative lever.

13. Velocipede according to one or more of the preceding claims, wherein immediately after a lever is in the position where the orthogonality condition occurs and till the descending travel of the other lever stops, the levers pivot in the same direction, that is both of them will follow a descending travel, both of them producing driving power, where the intensity will depend on how the weight of the rider will be distributed on the footrests (7).

14. Velocipede according to one or more of the preceding claims, wherein the threaded holes obtained on the crank arms (4), allow the levers to vary the maximum oscillation width, consequently, the maximum distance between the footrests (7) and the maximum inclination with respect to the horizontal plane of the latter.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. B62K3/00 B62M1/26 A63B22/20

ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B62K B62M A63B

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 practicable, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>US 8 220 814 Bi (RIVIGLIA MICHAEL F [CA] cited in the application on the whole document</td>
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</tr>
<tr>
<td>A</td>
<td>GB 499 002 A (EUGEN WOERNER) 17 January 1939 (1939-01-17) the whole document</td>
<td>1</td>
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<tr>
<td>A</td>
<td>FR 908 045 A (MICHEL) 28 March 1946 (1946-03-28) the whole document</td>
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* Special categories of cited documents:

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Date of the actual completion of the international search 1 September 2014

Date of mailing of the international search report 20/10/2014

Name and mailing address of the ISA

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Authorized officer

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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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Form PCT/ISA/210 (continuation of second sheet) (April 2009)
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<td>US 8220814 B1</td>
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<td></td>
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<tr>
<td>GB 499002 A</td>
<td>17-01-1939</td>
<td>NONE</td>
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<tr>
<td>FR 908045 A</td>
<td>28-03-1946</td>
<td>AU 2007322111 A1</td>
<td>29-05-2008</td>
</tr>
<tr>
<td>US 2008116655 A1</td>
<td>22-05-2008</td>
<td>AU 2010224326 A1</td>
<td>14-10-2010</td>
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<td>AU 2010224327 A1</td>
<td>14-10-2010</td>
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<td>AU 2010224328 A1</td>
<td>14-10-2010</td>
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<td>AU 2010224329 A1</td>
<td>14-10-2010</td>
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<td></td>
<td></td>
<td>CA 2670278 A1</td>
<td>29-05-2008</td>
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<td></td>
<td></td>
<td>EP 2086826 A1</td>
<td>12-08-2009</td>
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<tr>
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<td>EP 2647561 A1</td>
<td>09-10-2013</td>
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<td>EP 2650199 A1</td>
<td>16-10-2013</td>
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<td>EP 2650200 A1</td>
<td>16-10-2013</td>
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<td>US 2010219602 A1</td>
<td>02-09-2010</td>
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<td></td>
<td>US 2010219603 A1</td>
<td>02-09-2010</td>
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<td></td>
<td>US 2010219604 A1</td>
<td>02-09-2010</td>
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<td></td>
<td>US 2010244398 A1</td>
<td>30-09-2010</td>
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<td></td>
<td>US 2010244399 A1</td>
<td>30-09-2010</td>
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<td></td>
<td>US 2011215546 A1</td>
<td>08-09-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 2008063499 A1</td>
<td>29-05-2008</td>
</tr>
<tr>
<td>US 2010295263 A1</td>
<td>25-11-2010</td>
<td>AU 2010249655 A1</td>
<td>08-12-2011</td>
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<tr>
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<td></td>
<td>CA 2762098 A1</td>
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<td>CN 102438883 A</td>
<td>02-05-2012</td>
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