

REPLACED SHEETS

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GRAVITY GENERATING SYSTEM

FIELD OF THE INVENTION

The present invention is related to a system for generating
 5 electricity, and more particularly to a system for generating electricity
 by gravity.

BACKGROUND OF THE INVENTION

Some conventional methods such as those based on hydropower,
 firepower, and nuclear power are generally adopted to generate
 10 electricity worldwide. The method based on hydropower, however, is
 not proper in Taiwan because of the lack of rapid flow rivers, and it is
 impossible to generate electricity to meet total demand by this method.
 The firepower is the most used method in Taiwan. It must spend five
 years and NT\$ 20,000,000,000 for constructing a firepower station to
 15 generate electricity of 500,000 kilowatts. The investment usually can
 not be returned in twenty years. Besides, combustion of oil or coal will
 cause environmental pollution which is noted today. The nuclear power
 method can be used to generate considerable energy, but the nuclear
 waste is hard to treat. It also needs a large amount of water to supply
 20 the reactors and to cool the whole system. With respect to the safety and
 cost, the present invention is developed for generating electricity in
 more economical and convenient way.

SUMMARY OF THE INVENTION

An objective of the present invention is to provide a system
 25 substituted for the hydropower system for generating electricity more
 speedily and economically.

Another objective of the present invention is to provide a system for
 generating considerable electricity.

This Sheet Has Been Replaced





A further objective of the present invention is to provide a system for generating electricity without polluting environment.

In accordance with the present invention, a system for generating electricity by gravity includes a working medium to be descended from a higher place by gravity, a working shaft to be rotated around an axis by the working medium, and a generator driven by the working shaft for generating electricity .

In accordance with another aspect of the present invention, the system for generating electricity by gravity further includes a system body supporting thereon the working shaft, a first tank disposed upon the system body for collecting therein the working medium, a circulating device circulatably mounted on the system body for circulating therealong, and a plurality of second tanks substantially vertically spacedly mounted on system body for sequentially receiving the working medium from the first tank for driving the working shaft to rotate by gravity by means of containing therein the working medium.

In accordance with another aspect of the present invention, the system body is preferably a truss and the first tank is connected with the system body by a support.

In accordance with another aspect of the present invention, a first one of the second tanks first receives the working medium from the first tank and the other second tanks consecutively receives the working medium from the first second tank in order that the working shaft is continuously driven to rotate.

In accordance with another aspect of the present invention, the system for generating electricity by gravity further includes an upper tank for supplying the working medium to the first tank, a lower tank for collecting therein the working medium obtained from the second tanks,



and a pumping device for pumping the working medium from the lower tank to the upper tank.

In accordance with another aspect of the present invention, the working medium is a liquid, e.g. sea water or crude oil, and the pumping
5 device is preferably a sink pump.

In accordance with another aspect of the present invention, the upper tank preferably includes a stabilizing tank for stabilizing the liquid contained therein, and an inlet tank for receiving the liquid pumped from the lower tank.

10 In accordance with another aspect of the present invention, the stabilizing tank further includes a vertical wall for stabilizing the liquid, a first inlet for the liquid flowing from the inlet tank into the stabilizing tank, a basic outlet for supplying therefrom a fixed amount of the liquid to the first tank, and an adjustable outlet for supplying therefrom an
15 adjustable amount of the liquid to the first tank.

In accordance with another aspect of the present invention, the inlet tank preferably includes a second inlet for the liquid flowing into the inlet tank and an overflow outlet for overflowing therefrom the liquid contained therein.

20 In accordance with another aspect of the present invention, the system for generating electricity by gravity further includes a momentum stabilizing device for stabilizing a momentum inertia of the working shaft.

In accordance with another aspect of the present invention, the
25 momentum stabilizing device preferably includes a fly wheel accompanied a braking device mounted between the system body and the working shaft for stopping the rotation of the fly wheel before starting operation, and a transmission mechanism mounted between the



working shaft and the circulating device for increasing a speed of the working shaft.

In accordance with another aspect of the present invention, the transmission mechanism further includes a first gear mounted on the system body and driven to rotate by the circulating device, a second gear
5 driven to rotate by the first gear in a faster speed than that of the first gear, a third gear coaxially mounted with the second gear on the system body, a fourth gear driven to rotate by the third gear in a faster speed than that of the third gear, a fifth gear coaxially mounted with the fourth
10 gear on the system body, and a sixth gear which is coaxially fixed to the working shaft driven to rotate by the fifth gear in a faster speed than that of the fifth gear.

In accordance with another aspect of the present invention, the circulating device further includes a plurality of parallelly spaced ladder
15 shafts circulatably mounted on the system body, a plurality of connecting pieces respectively connecting together the ladder shafts, a plurality of fixing pieces respectively fixed to the ladder shafts for respectively fixing thereto the second tanks, and a guiding device secured to the system body for guiding the ladder shafts to circulate
20 along the system body.

In accordance with another aspect of the present invention, the second tanks further includes a duct for guiding the liquid to downwardly flow to an adjacent second tank below each second tank, an anti-tension strip mounted around the second tanks for preventing
25 deformation of the second tanks, and a buffering baffle for optimally collecting therein the liquid downwardly flowing from an adjacent second tank above each second tank.

In according with another aspect of the present invention, the second tank has a side inlet and a bottom outlet communicating therebetween the duct.

The present invention may best be understood through the following description with reference to the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective diagram showing an upper part of a preferred embodiment for generating electricity by gravity according to the present invention.

10 Fig. 2 is a side view diagram showing a momentum stabilizing device according to the present invention.

Fig. 3 is a detail drawing showing part of a circulating device according to the present invention.

15 Fig. 4 is a perspective diagram showing part of a circulating device and a second tank according to the present invention.

Fig. 5 is a bottom view diagram showing a second tank according to the present invention.

Fig. 6 is a perspective diagram showing a whole circulating device according to the present invention.

20 Fig. 7 is a perspective diagram showing an upper tank and a lower part of this preferred embodiment according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention will now be described more specifically with reference to the following embodiments. It is to be noted that the following descriptions of preferred embodiments of this invention are presented herein for the purpose of illustration and description only; it is not intended to be exhaustive or to be limited to the precise form disclosed.





Please refer to Fig. 1. Fig. 1 is a perspective diagram showing an upper part of a preferred embodiment for generating electricity by gravity according to the present invention. A gravity generating system 1 includes a system body 10, a first tank 20, a circulating device 40, a plurality of second tanks 50, a generator 60, and an upper tank 70. The system body 10 is the framework of the system 1. The working medium was stored in the first tank 20 before the operation of the system 1, then the working medium flows downwardly into the second tanks 50 which are substantially vertically spacedly mounted on circulating device 40 and move vertically due to the impulse of receiving the working medium. The circulating device 40 circulates around the system body 10 ceaselessly corresponding to the moving of the second tanks 50 and drives the working shaft 601 to rotate. The generator 60 generates electricity by transforming kinetic energy. The falling working medium is pumped to the upper tank 70 as the source of another cycle. The theory of this system 1 is to transform potential energy to electrical energy.

Please refer to Fig. 2. Fig. 2 is a side view diagram showing a momentum stabilizing device according to the present invention. The momentum stabilizing device 90 mounted on the system body 10 is driven to rotate by the circulating device 40 for stabilizing the momentum inertia of the working shaft 601. The equipment includes a fly wheel 9021 and a transmission mechanism 901 mounted between the working shaft 601 and the circulating device 40 for increasing speed of the working shaft 601. The transmission mechanism 901 further includes a rotating wheel 9011 connected with the circulating device 40, and a speed-increasing device 9012 for increasing the rotation speed of the working shaft 601. The speed-increasing device 9012 includes a



first gear 90121, a second gear 90122, a third gear 90123, a fourth gear 90124, a fifth gear 90125, and a sixth gear 90126. The first gear 90121 is coaxially mounted with the rotating wheel 9011, and the second gear 90122 which is engaged with the first gear 90121 is driven to rotate by
5 the first gear 90121 in a faster speed than the first gear 90121. Similarly, the third gear 90123 is coaxially mounted with the second gear 90122, and the fourth gear 90124 which is engaged with the third gear 90123 is driven to rotate by the third gear 90123 in a faster speed than the third gear 90123. As stated above, the fifth gear 90125 is coaxially mounted
10 with the fourth gear 90124, and the sixth gear 90126 which is engaged with the fifth gear 90125 is driven to rotate by the fifth gear 90125 in a faster speed than the fifth gear 90125. The sixth gear 90126 is mounted coaxially and fixed to the fly wheel 9021 and the generator 60, and the fifth gear 90125 is mounted coaxially with the second fly wheel 9022.
15 The braking device 903 is used for stopping the rotation of the fly wheel 9021 before starting operation till the whole system 1 is on ready.

Please refer to Fig. 3 and Fig. 4 showing the circulating device according to the present invention. Part of the circulating device 40 includes a ladder shaft 401, a fixing piece 402, a moving shaft 403, a
20 connecting piece 404, a locking device 405, and a guiding device 406. The second tank 50 is connected with the ladder shaft 401 by the fixing piece 402 having two arms 4021 with equal length which support the weight of the second tank 50. The connecting piece 404 is used for transferring the momentum of the moving shaft 403 which is used for
25 transferring the momentum of the fixing piece 402. The locking device 405 for preventing breakaway of the fixing piece 402 and the connecting piece 404 includes a pair of rings 4052 and 4053, a C-type ring 4054, and a trough 4055. The ring 4052 and the C-type ring 4054 can limit



the moving of the fixing piece 402 and the connecting piece 404 in the region 4051. The guiding device 406 for guiding the ladder shafts 401 to circulate along the system body 10 includes two circulating flutes 4061 and 4062 as the moving paths of pulleys 4031 and 4032 connected
5 with the ladder shaft 401.

Please refer to Fig. 4 and Fig. 5 showing the structure of one second tank according to the present invention. The second tank 50 includes a duct 501, four fixing slices 502, an anti-tension strip 503, and a buffering baffle 504. The duct 501 which is used for guiding the
10 working medium to downwardly flow to an adjacent second tank 50 below each second tank 50 has a side inlet 5012 and a bottom outlet 5011 under the bottom 505 of the second tank 50. The fixing slices 502 are used for fixing the second tank 50 on the circulating device 40. The anti-tension strip 503 mounted around the second tank 50 is used for
15 preventing deformation of the second tank 50. The buffering baffle 504 mounted over the second tank 50 is used for optimally collecting the working medium without splashing.

Fig. 6 is a perspective diagram showing a whole circulating device according to the present invention. The system body 10 is a truss 101.
20 The system body 10, the circulating device 40, and the second tanks 50 constitute main part of this system 1 for generating electricity by gravity.

Fig. 7 is a perspective diagram showing an upper tank and a lower part of this preferred embodiment according to the present invention. The upper tank 70 for supplying the working medium to the first tank 20
25 includes a stabilizing tank 701 for stabilizing the working medium, and an inlet tank 702 for receiving the working medium pumped from the lower tank 3 by the pumping device 4. As indicated in the Fig. 1, the stabilizing tank 701 includes a vertical wall 7011 for stabilizing the



working medium, a first inlet for the working medium flowing from the inlet tank 702 into the stabilizing tank 701, a basic outlet 7013 and an adjustable outlet 7014 for supplying fixed and adjustable amount of the working medium to the first tank 20 via ducts 7031. The inlet tank 702
5 has a second inlet 7021 for the working medium flowing in and an overflow outlet 7022 for overflowing the excess working medium. The lower tank 3 is used for collecting the working medium splashing from the second tanks 50 by a canal structure 301.

Thus, the principle of the present invention includes a working
10 medium to be descended from a higher place by gravity, a working shaft 601 to be rotated around an axis by the working medium, and a generator 60 driven by the working shaft 601 for generating electricity.

Compared to a conventional method based on firepower for supplying 500,000 kilowatts, it spends no more one year and less than
15 NT\$ 100,000,000 to construct a power station according to the present invention. Besides, no pollution is produced and no other power is needed to start this system. It is indicated that a 30 meters height circulating device with a 3 horsepower pumping device providing 60 gallons water in a minute, ten second tanks which vertically moved with
20 a speed of 30 meters in a minute, and 2,000 kilograms of circulating water can generate electricity of 12 kilowatts. Another example is that a 30 meters height circulating device with a 3 horsepower pumping device providing 600 gallons water in a minute, and ten second tanks which vertically moved with a speed of 20 meters in a minute can generate
25 electricity of 500 kilowatts. The quantity of generating electricity may be adjusted by changing scale of the system, height of the circulating device, and amount of the circulating water, etc. Easy operation and maintance is also a remarkable advantage of the system.



While the invention has been described in terms of what are presently considered to be the most practical and preferred embodiments, it is to be understood that the invention need not be limited to the disclosed embodiment. On the contrary, it is intended to cover various
5 modifications and similar arrangements included within the spirit and scope of the appended claims which are to be accorded with the broadest interpretation so as to encompass all such modifications and similar structures.



What I Claim Is:

1. A system for generating an electricity by gravity comprising:
a working medium to be descended from a higher place by gravity;
a working shaft to be rotated around an axis by said working medium;
5 and
a generator driven by said working shaft for generating said electricity.
2. A system according to claim 1, further comprising:
a system body supporting thereon said working shaft;
a first tank disposed upon said system body for collecting therein said
10 working medium;
a circulating device circulatably mounted on said system body for
circulating therealong;
a plurality of second tanks substantially vertically spacedly mounted on
said system body for sequentially receiving said working medium from
15 said first tank for driving said working shaft to rotate by gravity by
means of containing therein said working medium;
a momentum stabilizing device for stabilizing a momentum inertia of
said working shaft;
an upper tank for supplying said working medium to said first tank;
20 a lower tank for collecting therein said working medium obtained from
said second tanks; and
a pumping device for pumping said working medium from said lower
tank to said upper tank.
3. A system according to claim 2, wherein a first one of said second
25 tanks first receives said working medium from said first tank and the
other said second tanks consecutively receives said working medium
from said first one of said second tanks in order that said working shaft
is continuously driven to rotate.





4. A system according to claim 3 wherein said working medium is a liquid.
5. A system according to claim 2 wherein said circulating device includes:
- 5 a plurality of parallelly spaced ladder shafts circulatably mounted on said system body;
- a plurality of connecting pieces respectively connecting together said ladder shafts;
- a plurality of fixing pieces respectively fixed to said ladder shafts for
- 10 respectively fixing thereto said second tanks; and
- a guiding device secured to said system body for guiding said ladder shafts to circulate along said system body.
6. A system according to claim 2 wherein each of said second tanks includes:
- 15 a duct for guiding said working medium to downwardly flow to a following second tank;
- a buffering baffle for optimally collecting therein said working medium downwardly flowing from a previous second tank; and
- a side inlet and a bottom outlet communicating therebetween said duct.
- 20 7. A system according to claim 2 wherein said momentum stabilizing device is a fly wheel.
8. A system according to claim 2, further comprising a transmission mechanism mounted between said working shaft and said circulating device for increasing a speed of said working shaft, said transmission
- 25 mechanism including:
- a first gear mounted on said system body and driven to rotate by said circulating device;





- a second gear driven to rotate by said first gear in a faster speed than that of said first gear;
- a third gear coaxially mounted with said second gear on said system body;
- 5 a fourth gear driven to rotate by said third gear in a faster speed than that of said third gear;
- a fifth gear coaxially mounted with said fourth gear on said system body; and
- a sixth gear coaxially fixed to said working shaft and driven to rotate by
- 10 said fifth gear in a faster speed than that of said fifth gear.
9. A system according to claim 8, further comprising a braking device mounted between said system body and said working shaft.
10. A system according to claim 2 wherein said upper tank includes a stabilizing tank for stabilizing said liquid contained therein, said
- 15 stabilizing tank further including:
- a basic outlet for supplying therefrom a fixed amount of said working medium to said first tank;
- an adjustable outlet for supplying therefrom an adjustable amount of said working medium to said first tank; and
- 20 an overflow outlet for overflowing therefrom said working medium contained therein.

