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Ian GILMARTIN & Robert CATTLEY

Mini Water Wheel



<http://www.theherald.co.uk/news/77788.html>

1 January 2007

"Free Electricity"

It is a mechanical problem that has troubled scientists since the ancient Greeks. Now a Scottish electrician has invented a small water wheel that could save thousands of pounds in energy bills.

Ian Gilmartin, 60, who has no mains electricity, is generating power from the stream in his garden. He and friend Bob Cattley, 58, have invented a mini water wheel capable of supplying enough electricity to power a house, with no running costs and zero carbon emissions.

The contraption is the first off-the-shelf water wheel system which can generate a good supply of electricity from a waterfall as little as 20cm in height.

It is designed to be used in small rivers or streams, making it ideal for potentially thousands of homes across Britain.

Mr Gilmartin, an electrician and inventor born and raised in the village of Springfield, near Cupar, Fife, was not prompted to think up his device by high energy bills - he does not own a TV and has never lived in a house with electricity.

But he has a stream at the back of his house near Staveley, in Cumbria, and with the help of PhD engineering student Mr Cattley, now hopes to see the invention in the shops by the end of next year.

Mr Gilmartin, who lived in Linwood before moving to Cumbria in the late-1960s, began experimenting three years ago with yoghurt pots, toilet rolls and wheelie bins in the stream, before test-running a prototype.

He took the results to the Lake District National Park, and secured a £15,000 grant from the organisation's sustainability fund. The prototype has been working successfully at St Catherine's, a National Trust site near Windermere, opening up previously untapped energy.

The water wheel produces one to two kilowatts of power and generates at least 24 kilowatt hours of sustainable green energy in a day, just less than the average household's daily consumption of around 28 kilowatt hours. It should cost around £2000 to install, and will pay for itself inside two years.

The Beck Mickle low head micro hydro generator could potentially provide electricity to more than 50,000 British homes and could be used industrially. The inventors predict a series of them linked on the same river course could create enough electricity to power a small town or large hospital.

Mr Gilmartin said he came up with the idea after giving up work to look after his son, who had epilepsy. "There was nothing available on the market to recover any sensible amount of energy from low (pressure) heads, so in wanting something to think about at the time, I thought of the idea of having revolving buckets to recover energy.

"While we cannot say this provides free electricity, because of the initial cost of buying the machine, it is expected to pay for itself within two years and then greatly reduce the owner's electricity bills after then. Because what we are doing is cheap to make, the pay-back is very quick."

Gilmartin's Website:

<http://www.beck-mickle-hydro.co.uk/>

WO 2006082403

[[PDF Format](#) -- 1.1 MB]

IMPROVEMENTS IN AND RELATING TO GRAVITY TYPE WATER WHEELS

(2006-08-10)

GILMARTIN, John Graham

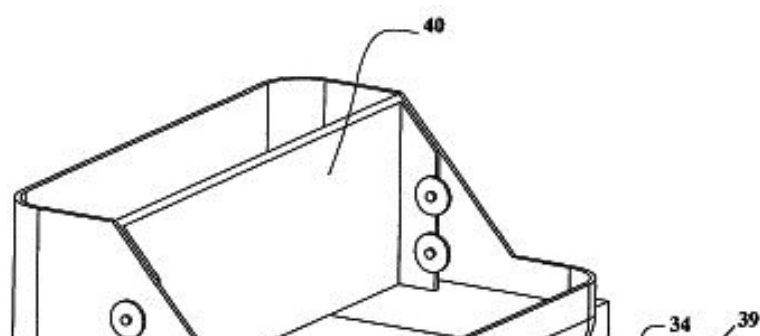
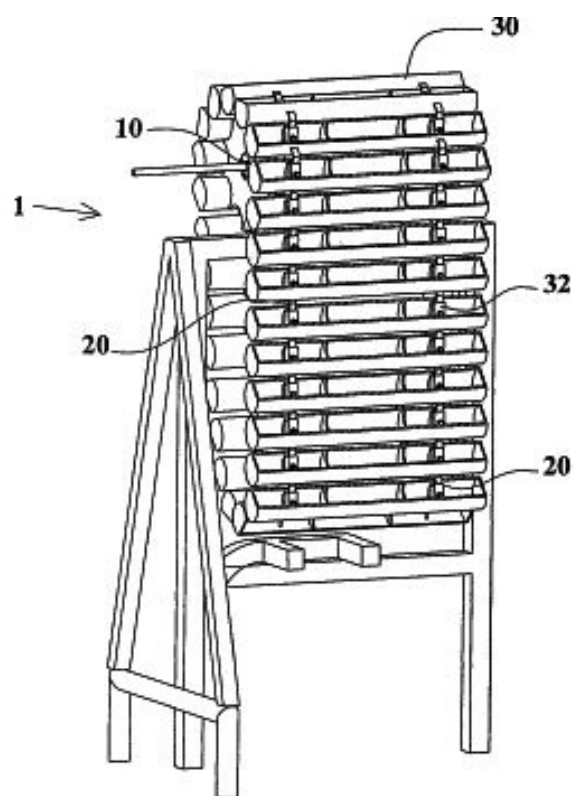
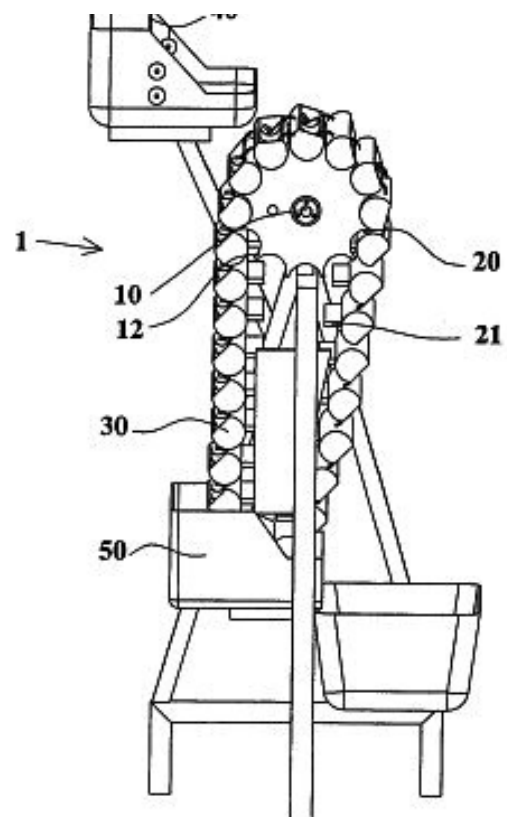
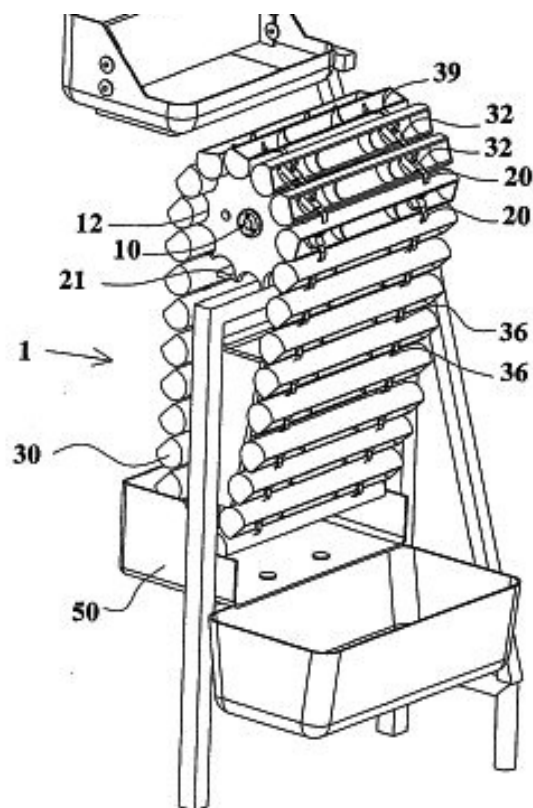
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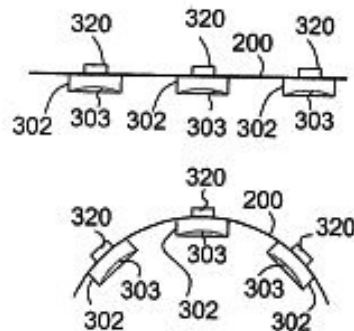
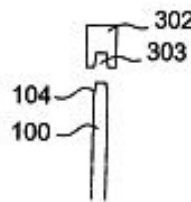
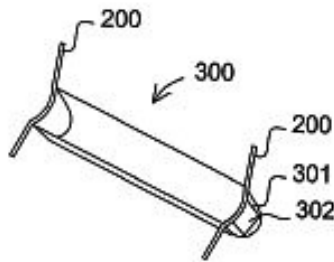
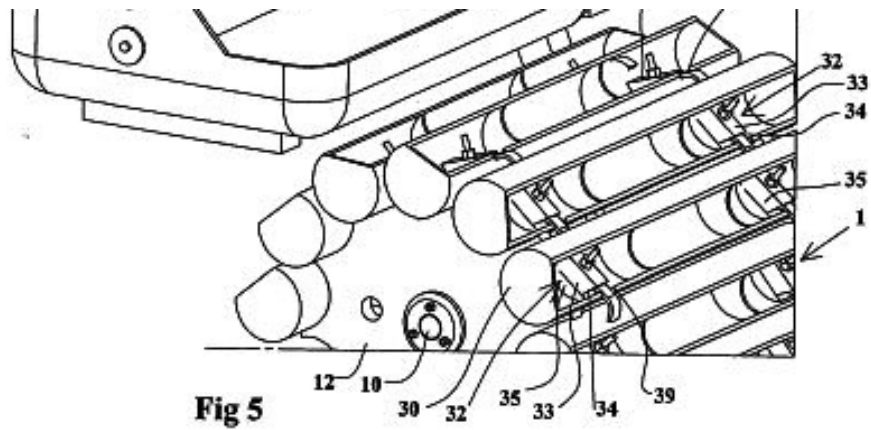
Classification: - international: F03B9/00; F03B9/00; - European: F03B9/00B

Application number: WO2006GB00351 20060202

Priority number(s): GB20050002142 20050202







<http://www.est.org.uk/aboutest/news/dailynews/index.cfm?mode=view&articleid=15061334>

7 October 2005

Yoghurt Pot Generator Could Revolutionise Energy Production

A revolutionary new invention that uses yoghurt pot plastic to generate electricity could be a significant new step towards increasing the UK's reliance on renewables.

The Beck Mickle Hydro project uses the plastic device to generate electricity from shallow

waters such as rivers and streams to a depth of just 20 cm.

"We could be looking at significant changes to power production," explained the inventor of the device, Ian Gilmartin.

"We want to generate energy from water between 20 cm and two metres deep. No one else has attempted anything like this in such shallow water."

Mr Gilmartin hopes that the invention, currently being developed at Lancaster University, will translate into a device that could generate enough electricity to power a house.

Homeowners could then buy the machine for around £1,000 to achieve their own renewable microgeneration.

The device could also reportedly be used to provide drinking water and in air conditioning.

The project has received funding from the Lake District National Park Authority's sustainable development fund. It is believed the device, once developed, could be used in up to 100,000 sites across the UK.

http://www.beck-mickle-hydro.co.uk/index.php?id=bmh_lancs_uni

Beck Mickle Hydro Ltd in Partnership with Lancaster University.

Local inventor and electrician Ian Gilmartin has redesigned the water wheel for the 21st century to provide renewable inexpensive electricity from even tiny streams without harming fish or contributing to global warming. This unique patented technology makes use of recycled plastic and can even provide power from becks that are no more than a trickle. It is envisaged units that are scalable will be sold as white goods that can easily be approved and installed before simply being plugged in.

Following a referral from Business Link Cumbria, Ian has been working with the Enterprise and Business Partnerships (EBP) Team of Lancaster University's Environment Centre to assess the environmental impact of this technology, identify its market potential and strengthen its patent protection.

The environmental impact assessment focused on the use of food-grade recycled plastics within the water wheel, to support a possible demonstration at the National Trust's St Catherine's site in Windermere. This was contracted out to CookPrior Associates Ltd, a local consultancy experienced in such assessments, which identified a low risk of any organic chemicals leaching from the plastics to be used, but recommended a series of leaching trials to ensure that no unforeseen problems arose.

Through a variety of literature searches, internet searches and personal contacts with organisations such as the: NERC, Environment Agency and Land Registry, the EBP team have identified several reports providing information on potential sites for low-head hydro generation and the proportion of the UK meeting minimum gradient and flow requirements.

However, further work remains to be done, in particular the development of a comprehensive business plan to successfully attract investors. Therefore, a team of four MBA students

undertaking a business planning module in the University's Management School, have been recruited. The team have enthusiastically accepted the challenge of pulling together the market information so far obtained and producing a first draft business plan for delivery in mid December. During the business planning project, EBP have continued to investigate a means of actively identifying potential customers, rather than relying solely on passive internet-based advertising. This has now led to discussions with the University's Geography

Department regarding the possible development of an automated system for analysing 1 in 10,000 scale maps and providing the postcodes of potential customers for use in targeted mail shots, possibly along with their electricity bills. EBP are also working closely with Ian using the group's patent and intellectual property experience, to strengthen Beck Mickle Hydro's patent position and ensure appropriate confidentiality agreements are in place across their numerous contacts.

Beck Mickle Hydro have also been working closely with the Lancaster University Renewable Energy Group (LUREG) to evaluate their technology against siphon technology LUREG are developing as an alternative means of low-head hydroelectric generation. LUREG, which has significant expertise in low head hydroelectric generation in both tidal and non-tidal environments have adopted Ian's technology and are working closely with him to establish a number of demonstration sites for both technologies.

The EBP team with the financial support of the NorthWest Development Agency and Higher Education Innovation Fund helps companies across the NorthWest to access the environmental and science expertise of Lancaster University. This is accomplished via company visits to identify areas where assistance would be beneficial, small pieces of free consultancy, technical and business based student projects and facilitating the formation of affinity groups between companies to resolve common issues through collaborative research partnerships. The EBP team also serve as the prime contact for the Lancaster Environment Centre, which is the largest of its kind in Europe and brings people together from across the university together with the NERC's Centre for Ecology and Hydrology.
