

# Finally, some background information on William Jay Fogal's Charged Barrier Transistor / Semiconductor from Fogal, himself!



VINYASI

MAY 16, 2026

Posted by Gary Steckly to Google Groups:

## Gary Steckly

Sep 16, 1994, 11:04:05 AM

to

In article <josemj1-1209...@joses-mac.jhuapl.edu>

jos...@aplmail.jhuapl.edu (Marshall Jose) writes:

>From: jos...@aplmail.jhuapl.edu (Marshall Jose)

>Subject: Re: Fogal patent

>Date: Mon, 12 Sep 1994 17:20:50 GMT

>I obtained all pages of the patent and read them; they are at least

>remarkable. Is the patent the focus of a discussion that I missed?

>I don't get alt.sci.physics.new-theories, so I don't know if that's

>where the discussion is.

>The patent looks too mundane to be fake. I'm really quite dismayed

>that anyone could be granted a patent for such a (patently)

unoriginal

>idea. Could someone fill me in on the particular details on this?

someone posted something to sci.physics.fusion a while back on this, and since everything on that conference is archived at [sunsite.unc.edu](http://sunsite.unc.edu) in fusion-digest.src, it was easy to dig up, so I did.

This thing has some rather incredible consequences if it is for real...excerpt from the fusion archives follows...

-----excerpt begins-----

1994.07.06 / S Publications / Spectacular Claims for Unlimited Energy

Originally-From: supe...@cnj.digex.net (Superconductivity Publications)

Newsgroups: sci.physics.fusion

Subject: Spectacular Claims for Unlimited Energy

Date: 6 Jul 1994 16:49:28 GMT

Organization: Superconductivity Publications, Inc., Somerset, NJ USA

[ Article crossposted from sci.physics ]

[ Author was Superconductivity Publications ]

[ Posted on 6 Jul 1994 16:00:25 GMT ]

The following article appears in the June 1994 monthly technical edition of Superconductivity News (Vol. 6, No. 42).

William Jay Fogal, president of Quick Chek Industries (Martinez, GA) has invented and patented an electronic device for which he has made

very broad claims. Others learning about the device have further extrapolated the claims to the point that if real, the device means the end of power utilities, the rendering useless of the entire electrical power grid, the demise of manufacturers of electrical generators and electrical cable, and a dramatic reduction in the activities of hundreds of thousands of ancillary service providers.

Most industries will have to change or die. The infrastructure alterations will be the most profound the world has ever witnessed. While the odds are stacked against it being real, the staff of Superconductivity News (SN) believes it is important to report the events as they occur.

Fogal is not claiming he has invented a room temperature superconductor. What he has invented is either completely fatuous or it is astounding in that it strikes at the very core theoretical underpinnings of electromechanics. Fogal told SN that his device grew out of his efforts to fix a broken car radio in the mid 1970s. As he got past the wiring and the circuits and into the semiconductors actually running the radio, he made changes that greatly improved the audio quality. He then let his ideas lay idle for more than a decade before finally returning to the research in the late 1980s.

Fogal says his charged barrier semiconductor device allows electrons to flow without resistance (i.e., as in superconductors) at room temperature. He claims the device demonstrates a very high AC voltage and AC current gain. His charged barrier device is on a bipolar design that can be incorporated in (MOS) metal oxide semiconductor designs, as well as multiple gate devices. It operates on a hall effect electromagnetic field internal device. The hall effect magnetic field forces electron flow and angular spin of the electrons in the same direction to the top of the conduction bands in the crystal lattice on semiconductor devices, unlike (SOI) silicon on insulator devices that force electron flow to the surface of the semiconductor lattice. "Unlike superconductors which generate an

external field, my semiconductor creates a self-regulating magnetic field internal to the device," Fogal said.

-- Fogal's Description of His Device --

Charged barrier semiconductor devices incorporate a base plate member of a semiconductor crystal. Also incorporated with the base plate member is a dielectric material and a second base plate member. The combination of the two base plate members constitutes an electrolytic capacitor. The first base plate member will create a transverse electric field that is known as a hall effect in the base plate member of the semiconductor crystal. The ratio of the transverse electric field strength to the product of the current and the magnetic field strength is called the hall coefficient, and its magnitude is inversely proportional to the carrier concentration on the base plate member. The product of the hall coefficient and the conductivity is proportional to the mobility of the carriers when one type of carrier is dominant. Since the base plate member is tied directly to the emitter junction of the semiconductor, the hall coefficient comes into play with the creation of a one pole electromagnet in the base plate member.

The hall effect of the electrolytic capacitor, in relation to the position on the crystal lattice, will force electron angular spin in the same direction and electron flow to the top of the conduction bands in the lattice. The magnetic flux and the density of the carriers on the electrolytic capacitor plate are in direct proportion to the magnetic flux and carrier concentration on the emitter junction on the semiconductor crystal.

Since the angular spin and the flow of the electrons are in the same direction, due to the influence of the electromagnetic field, the

electron lattice interaction factor does not come into play. The electron wave density is greater and the mobility of the electron flow

is faster. The device does not exhibit frequency loss in the wave.

The base or gate of the semiconductor is more sensitive to input signal. These devices will typically turn on with an input to the junction in the area of 0.2 MV to 0.4 MV with an output at the collector junction of 450 MV at 133.5 UA of current.

-- Electron Wave Function In Charged Barrier Technology --

Think of the conduction bands in a crystal lattice as a highway. Electrons in the free state will move along this highway. The only difference is the electron angular spin can be in different directions. With the electrons spinning in different directions, the electrons would travel on different lanes of the highway and collisions can occur. The scattering and the collision of the electrons can cause friction and resistance to the flow. The resistance to the flow and the friction can cause semiconductors to run hot.

In semiconductor devices, this is called lattice scattering or electron lattice interaction. If we could make the electrons move in one direction, and also spin in the same direction, then we could have more traffic electrons (on the highway) without having the resistance or the collisions. We could put a barrier between the lanes on the highway. But, the electrons could still spin in different directions. But, what if we could charge this barrier?! Turn this barrier into an electromagnetic field! An electromagnetic field in one direction. A one pole electromagnet! A hall effect magnetic field. This one pole electromagnetic field would make almost all of the electrons spin in the same direction. Because the electrons are a negative charge and the electromagnetic field has a negative charge, the electrons travel

in unison and then we could have more electrons on the highway,  
and  
the electron travel could be faster.

The orientation of the spin of the electrons in the crystal lattice,  
due to the electromagnetic field, has a direct impact on the  
formation  
of the wave. If the orientation of the spin of the electrons are in  
unison, there will be no loss in the wave nature, and the density of  
the wave will be greater, and the frequency of the wave will be  
complete. If the spin of the electrons in the lattice are in  
different directions, the wave nature will be affected and there will  
be a loss in the density of the wave. And, there will be a gap in the  
frequency of the wave.

-- Patent Issued --

Fogal filed an application for a US patent covering the design on  
March 1, 1991 and awarded No. 5,196,809, titled "High gain, low  
distortion, faster switching transistor," on March 23, 1993. The  
patent includes figures, diagrams, and several data plots, e.g. output  
signal vs. input signal (vac) for the Fogal device vs. a standard  
transistor. The patent was Fogal's first, but he has since  
received a second patent, No. 5,311,139, covering a fuse testing  
device that has nothing to do with the semiconductor. Another US  
patent application covering improvements to the semiconductor was  
filed in January of this year. The patent abstract and claim 1  
follow.

-- Patent Abstract --

A transistor in which the emitter terminal is coupled to ground  
through a filter capacitor. The filter capacitor has a capacitance of  
from about 0.2 uf to about 22 uf and can be connected either by  
itself

or in parallel with a resistor, depending upon the circuit in which it is used. The incorporation of a filter greatly of such a capacitance level provides greatly improved gain and less distortion of the input signal, to permit a high output to be achieved in fewer amplifier stages and with less current draw and heating than in conventional transistor amplifier stage circuits. Additionally, the transistor can be provided in a unitary structure by incorporating the filter capacitor directly on the transistor chip, and can also be provided by incorporating the transistor and a resistor within the casing of a filter capacitor.

#### Claim 1

- a) a substrate;
- b) one of a NPN and a PNP transistor integrally formed on the substrate, the transistor having a base, a collector, and an emitter;
- c) a parallel resistor and filter capacitor network coupled with the emitter and mounted on the transistor, to form an integral part of the integrated circuit, the filter capacitor including an outer casing; and
- d) base, collector, and emitter terminals on the substrate and coupled with the base, the collector, and the emitter, respectively, to permit the integrated circuit to be connected with an electronic circuit, wherein the integrated circuit is contained within the filter capacitor outer casing.

-- Prototypes Fabricated --

Fogal told SN that he has made six prototypes of his device. Prototype radios and computer modems have been fabricated employing the device for demonstration purposes. Fogal emphasizes the noise reduction aspects of his semiconductor.

Through the help of a colleague, Allan Ames of Advanced Scientific Applications (Houston, TX), one of Fogal's semiconductors will be tested by scientists at the Texas Center for Superconductivity at the University of Houston. This is being arranged through Wei-Kan Chu. SN discussed the situation with Chu and he confirmed that testing will

be done after the documents he had received were reviewed. SN's editor-in-chief reviewed what the device might mean with Chu.

Clearly

Chu had not had the opportunity to give the matter much thought.

Thomas E. Bearden (Huntsville, AL) believes Fogal's semiconductor represents a true overunity electrical device. "Electromagnetics is over 100 years old; many of its assumptions are flat wrong," Bearden told us. He relates the way the Fogal semiconductor works to the way

heat pumps function, but says it takes it one step beyond. A Fogal semiconductor simply stops electrons from flowing and passes the pure

potential energy from the now-free electrons with the circuit blocking

the drift current. Unlike superconductors, pairs of electrons are not needed to pass the current along without resistance.

Bearden added that, based on endurance load tests on the Fogal semiconductor, they are led to the firm conclusion that the chip actually stops the longitudinal flow of electrons, strips them of their energy, and passes the pure energy along without resistance. In this regard he says it behaves like a heat pump but goes one step beyond to pull energy from the vacuum.

-- SN Analysis and Comment --

It is important to note that the device does not violate the rules of thermodynamics involving the conservation of energy. It does not

make energy from nothing. One end of a Fogal circuit would provide electricity for work such as running a light bulb or a computer, and the other end will draw energy from the environment and get quite cold in the process.

The best aspect of this story is that either a Fogal semiconductor works or it doesn't. There is nothing sophisticated in its construction and there are no mysterious materials fabrication steps involved. There should not be any gray or cloudy areas. Testing should be straightforward.

Q: What are the odds of its being real?

A: If it is real, you will hear more about it soon enough. If it isn't, think how much fun you have had reading this article.

Q: Are there any intrinsic limitations if the device is real?

A: None we can foresee.

Q: What does it mean to me?

A: It is a black or white situation. If the device is real and Beardon's extrapolation is accurate it means:

- the end of the superconductivity industry as we know it within a few years.
- the immediate obsolescence of all engine, machinery, and electronics equipment designs.
- the beginning of a long-term scaleback by electrical utilities.
- a massive reorganization of industry and commerce.
- bankruptcy for millions of businesses that are unable to adapt.
- widespread unemployment forcing retraining on a scale never before witnessed.
- hyperinflation in economies that do not prepare for the changes.

- the price of precious metals and real estate rising rapidly.
- a potential shift in the world balance of power.

Of course, it might not be real . . . and nothing will happen.

Are we having fun yet? :)

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-----excerpt ends-----

take all this with a grain of salt, (not to infer claims like this shouldn't  
be investigated though...just in case) since the patent office has  
granted

some pretty strange patents recently. For example, I just saw one  
that covers

a process to tap the energy stored in the earth's rotational inertia.

(issued

may 24, 1994, patent no.05313850) Don't worry, according to the  
patent

abstract, there is enough stored energy to supply the world's needs  
for the

next 100 million years...and only slow the earth slightly. Apparently, after tapping that much energy for that period of time, the length of our days would be extended to 34 hours. What a scheme to get more leisure time eh? ;-)

Gary