CLAIMS

What is claimed is:

1. A power supply, comprising:

a first transformer that has a first primary winding and a first secondary winding;

a second transformer that has a second primary winding and a secondary winding;

a first current generator circuit that is coupled to said first transformer and generates a first waveform;

a first rectifier circuit that rectifies said first wave form;

a second current generator circuit that is coupled to said second transformer and generates a second waveform that is out of phase with said first waveform;

a second rectifier circuit that rectifies said second waveform;

a combiner that combines said first and second waveforms into a DC output signal;

a first coupling circuit that couples said first current generator circuit to said first transformer; wherein said first coupling circuit includes a first switching transistor, and a second switching transistor; wherein said first and second switching transistors are electrically connected to said primary winding of said first transformer and a first rail voltage; and

a second coupling circuit that couples said second current generator circuit to said second transformer; wherein said second coupling circuit includes two switching transistors, wherein said two switching transistors are electrically connected to said primary winding of said second transformer and a second rail voltage.

2. The power supply of claim 1, wherein said first current generator circuit includes a first current generator transistor and a second current generator transistor, said first

coupling circuit includes the first switching transistor connected to said first current generator transistor, and the second switching transistor connected to said second current generator transistor, said power supply operates such that said first switching transistor and said second current generator transistor are ON and said second switching transistor and said first current generator transistor are OFF in a first state, and said first switching transistor and said second current generator transistor are OFF and said second switching transistor and said first current generator transistor is ON in a second state.

3. The power supply of claim 1, wherein said first current generator circuit is electrically coupled to said primary winding of said first transformer, and said second current generator circuit is electrically coupled to said primary winding of said second transformer.

4. The power supply of claim 1, wherein said first current generator circuit is coupled to said secondary winding of said first transformer, and said second current generator circuit is coupled to said secondary winding of said second transformer.

5. The power supply of claim 1, wherein said first current generator circuit includes a first current generator transistor, said first coupling circuit further includes a third switching transistor and a fourth switching transistor coupled to said first current generator transistor, said power supply operates such that said first switching transistor and said third switching transistor are ON and said second switching transistor and said fourth switching transistor are OFF in a first state, and said first switching transistor and said third switching transistor are OFF and said second switching transistor and said fourth switching transistor are ON in a second state.

6. The power supply of claim 4, wherein said first and second rectifier circuits each include a pair of diodes.

7. The power supply of claim 4, wherein said first and second rectifier circuits include switches and an output of said power supply is coupled to said first and second primary windings.

8. The power supply of claim 1, further comprising at least one first tuning element connected to said first primary winding and at least one second tuning element connected to said second primary winding.

9. A method for power conversion, comprising:

generating with a first current generating circuit a first waveform that flows through a first transformer that has a first primary winding and a first secondary winding;

rectifying said first waveform;

generating with a second current generating circuit a second waveform that flows through a second transformer that has a second primary winding and a second secondary winding, said second waveform being out of phase with said first waveform;

rectifying said second waveform;

combining said first and second waveforms into a DC output signal;

controlling with a first coupling circuit the coupling of said first current generator circuit to said first transformer; wherein said first coupling circuit includes a first switching transistor, and a second switching transistor; wherein said first and second switching transistors are electrically connected to said primary winding of said first transformer and a first rail voltage; and,

controlling with a second a second coupling circuit the coupling of said second current generator circuit to said second transformer; wherein said second coupling circuit includes two switching transistors, wherein said two switching transistors are electrically connected to said primary winding of said second transformer and a second rail voltage.

10. The method of claim 9, wherein said first current generator circuit includes a first current generator transistor and a second current generator transistor, said first coupling circuit includes the first switching transistor connected to said first current generator transistor, and the second switching transistor connected to said second current generator transistor, said power supply performs the steps of operating in a first state such that said first switching transistor and said second current generator transistor are ON and said second switching transistor and said first current generator transistor are OFF, and operating in a second state such that said first switching transistor and said second current generator transistor are OFF and said second switching transistor and said first current generator transistor is ON.

11. A power supply, comprising:

a plurality of current generator circuits that generate a plurality of out of phase waveforms;

a capacitor circuit that includes a plurality of capacitors that are charged and discharged in a sequential manner to vary a voltage of said waveforms;

a plurality of switching circuits that control said charging and discharging of said capacitors; wherein each switching circuit includes a plurality of transistors and a plurality of switches; and,

a combiner that combines said waveforms into a DC output signal.

12. The power supply of claim 11, further comprising a plurality of tuning elements connected to capacitors.