



Pedaling Food Scraps for Fuel

A human-powered InSinkErator® disposer system converts food waste into cooking fuel

T.H. Culhane has seen it all. The National Geographic Explorer's work to improve the living standards for remote areas of our planet has shown him depths of human poverty that most Americans would struggle to even imagine. Along the way, Dr. Culhane has partnered with companies like InSinkErator, a business unit of Emerson, to invent simple technologies that help villages establish basic services without staggering cost.

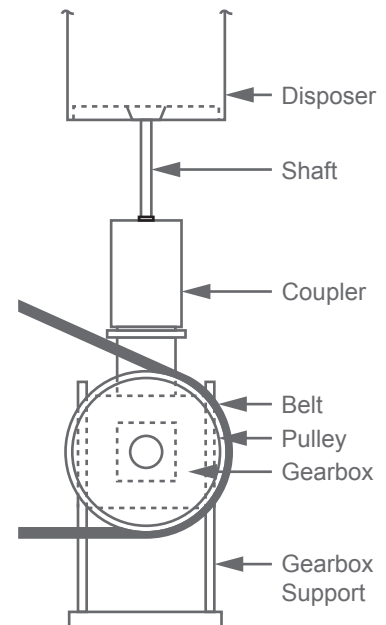
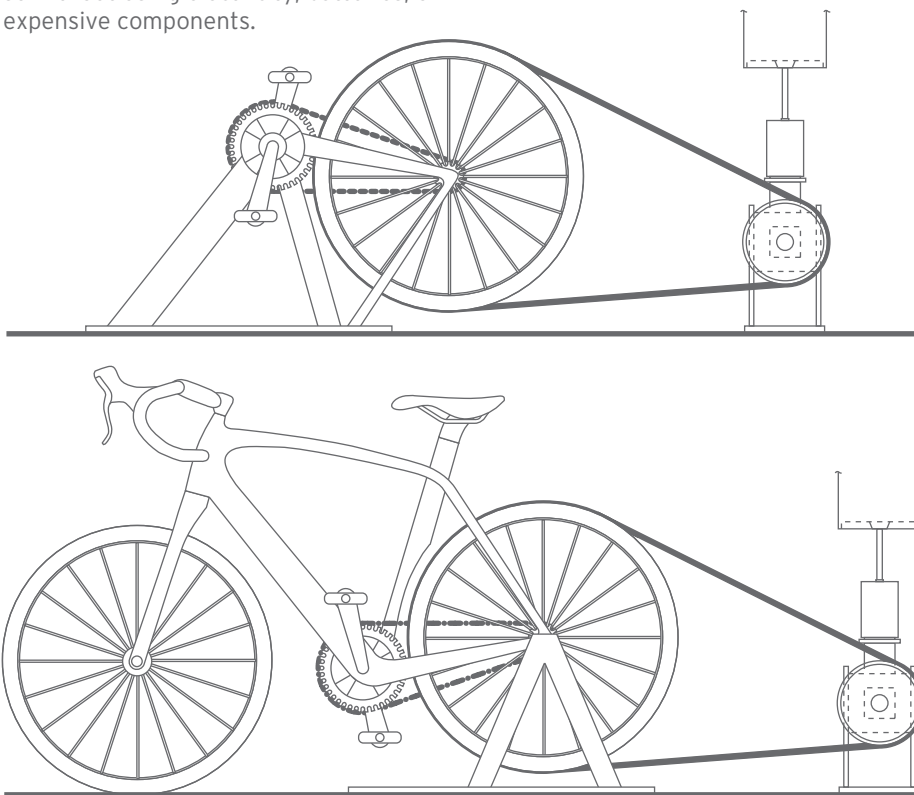
Dr. Culhane came to InSinkErator early in 2012 with an odd request. He found that finely ground food waste could be easily converted to methane gas that can be used for cooking gas in remote areas of the Middle East to Africa to Nepal. His challenge was simple: create a food waste disposer that not only grinds food into tiny particles, but does so without using electricity, batteries, or expensive components.

The engineers at InSinkErator had no problem with the first part. InSinkErator has created safe, effective food waste disposers for more than 75 years. The second part was an interesting challenge. Disclosed here is how they did it: creating a food waste disposer powered entirely by human motion—and a bit of American ingenuity.

Food waste disposers grind food by using a rotating shredder plate with lugs and a stationary grind ring contained in the disposer housing. An electric motor turns the rotating shredder plate and the lugs force the food waste against the grind ring where it is broken down into small pieces. Once the particles are small enough to pass out of the grinding mechanism, they are flushed out into the household plumbing.

In InSinkErator's human-powered disposer, the electric motor is replaced by a crank system coupled to rotating shredder plate assembly that is crankable by a human. In practice, the crank system is a crankset and rear wheel assembly of a bicycle. In another application, the crank is powered by a complete bicycle on a stand, with the rear wheel of the bicycle coupled to the rotating shredder plate assembly.

The bicycle parts connect through a gear box that is driven by a belt or chain from the bicycle's axle. To make the unit work, the user must simply pedal; the food waste is discharged into a holding tank, where it can be collected and added to an anaerobic digester—the device used to convert the waste into valuable cooking fuel.



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InSinkErator may make improvements and/or changes in the specifications at any time, in its sole discretion, without notice or obligation and further reserves the right to change or discontinue models.