Keurig's cold drink maker was a wildly complicated, multi-million dollar piece of tech — and that's why it flopped

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http://www.businessinsider.com/keurig-kold-failed-because-of-complicated-tech-2016-6#heres-why-it-failed-6

Facebook/Keurig Keurig Green Mountain once hoped the next big thing would be its cold-drink maker.

Less than a year after it launched, the brand is discontinuing the machine. Consumers who already purchased a Keurig Kold — a $370 machine that creates carbonated, chilled beverages — can get a full refund from the company.

The Kold's ability to deliver a carbonated, chilled beverage in 90 seconds without using a CO2 canister was intended to give it an edge over rivals like SodaStream.

There was lot of technology - and money - behind the device. Keurig filed more than 50 patents over the course of five years as it developed the system. The company invested about $100 million in the device in fiscal 2015, and said in September it planned to spend a similar amount in 2016.

But critics of the Kold were been quick to point out some big flaws in the device: it's *expensive*, large, needs to get warmed up, and **isn't any more convenient than popping open a soda**,

according to complaints on Keurig's website and Facebook page.

Business Insider took a closer look at the device in December to see just how complex the Kold is. A look back also helps explain why it cost so much, and why Keurig was never able to fully solve the problems that plagued the product.

It starts with a chiller.

Keuirg

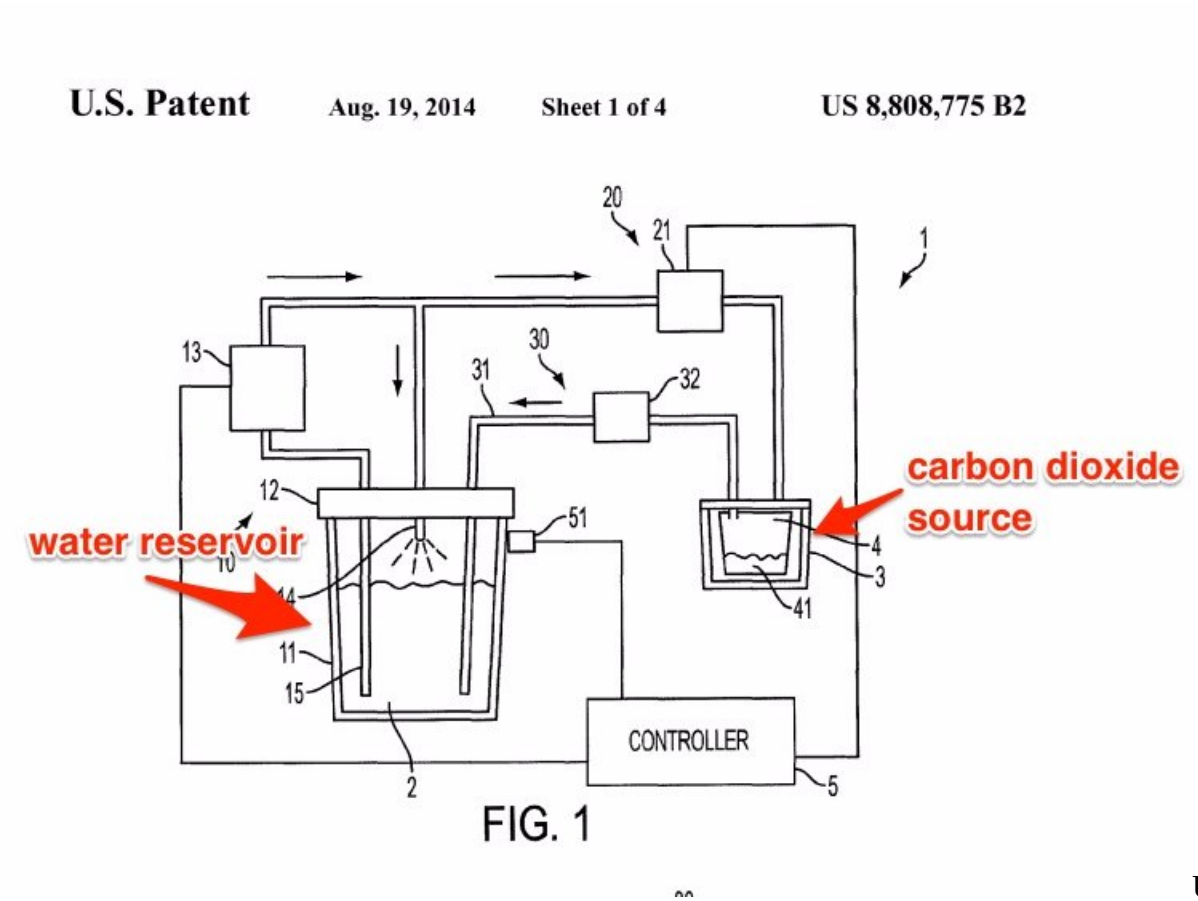
While much of the press surrounding Keurig Kold has focused on the machine's carbonation features, the process starts with chilling — a complex process in and of itself.

"There are a lot of ways to make something hot quickly, but there are few options to make something cold quickly," Keurig spokesperson Suzanne DuLong told Business Insider in December.

As soon as users insert a pod with the flavor of soda they are after, and start the machine, water is drawn into a chiller from the external water tank. The chilling process begins as an impeller spins, cooling the water.

If the water isn't cold enough, it will not absorb carbonation as well. Plus, the changing temperature of the water is responsible for setting off the chain of events that follows in the next 90 seconds.

The cold water then flows into the pod.



US Patent and Trademark Department

As the chiller does its job, a small amount of water is brought to the cartridge chamber, where the flavor pod is located.

The drawings in this August, 2014 patent by Keurig's Thomas Novak, Ross Packard, Peter Peterson and Shawn Gulla for a "Method and apparatus for cartridge-based carbonation of beverages" are not the exact schematics for the Keurig Kold machine. However, they do show the tech that underpins it, as water moves from one chamber to another.

The carbonation comes from "beads" in the upper chamber.

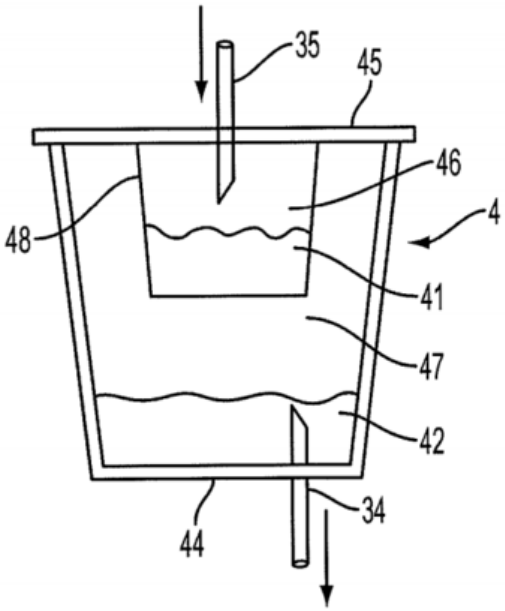


FIG. 9

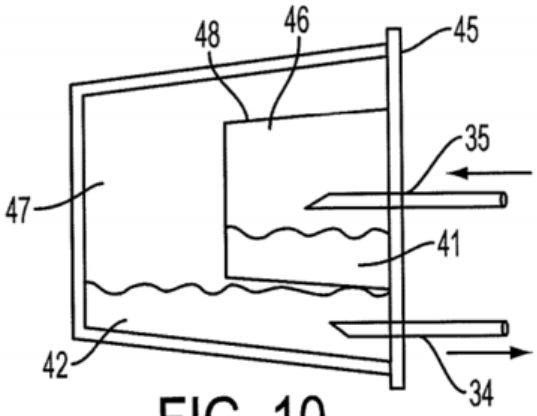


FIG. 10

Keurig

The flavor pod is divided into the two chambers. One contains beads that are made with a blend of minerals - primarily aluminum silicate - with tiny porous spaces that hold carbon dioxide captive until they're exposed to water. Keurig calls them "Karbonator" beads.

The second chamber contains the beverage syrup, which comes into play later.

Once the system registers the water in the chiller has reached the optimum temperature of approximately 37 degrees, the Keurig Kold releases the small amount of water into the top of the pod, wetting the beads and releasing the carbon dioxide.

...but it doesn't end there...

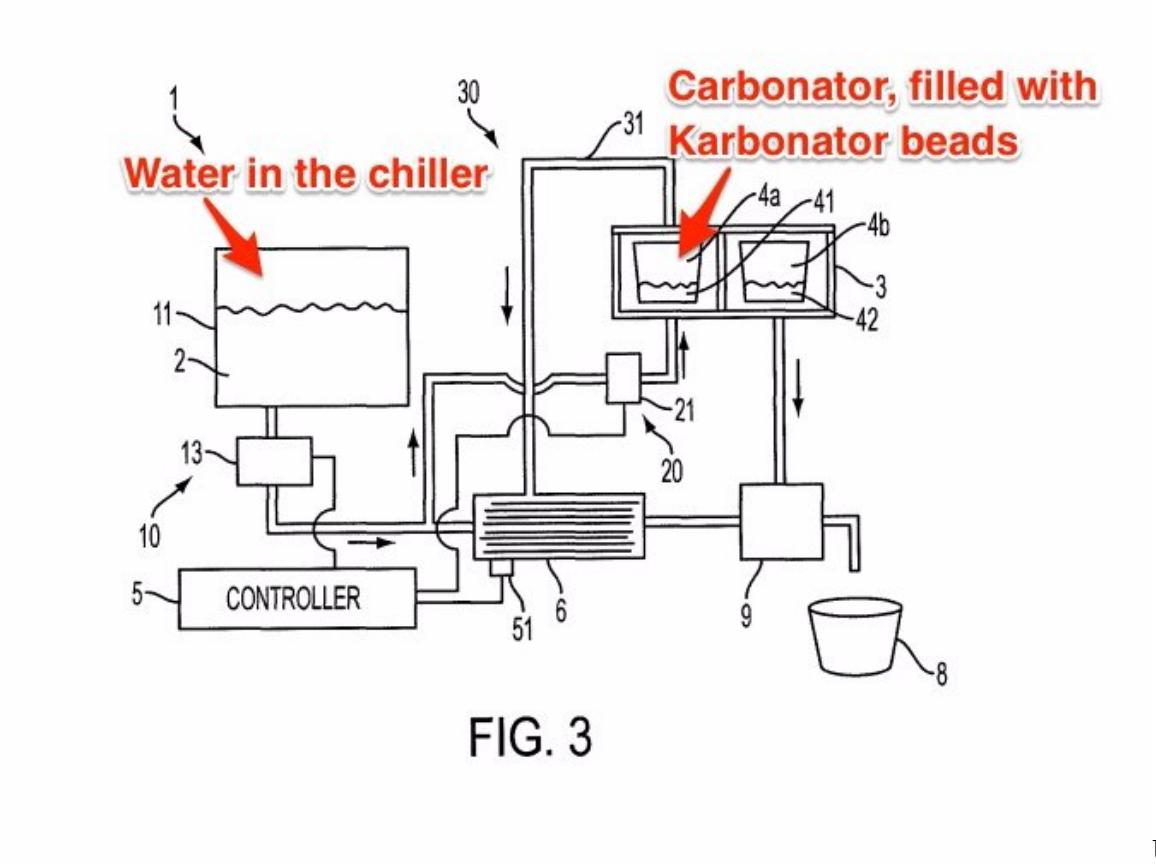


FIG. 3

US Patent and Trademark Office

The released carbon dioxide then has to travel back into the chiller to carbonate the water.

(Again, patent illustrations are not exact replicas of the Kold — this one provides an illustration of the Keurig-patented process through which "liquid is carbonated in a single pass through a carbonator," with arrows showing the path water takes to become carbonated.)

Mixed, and ready to drink.

Keurig

At this point, the system's mixer expels the pod's syrup just as the carbonated water is being released, producing two separate streams that combine to make the beverage. The timing and volume are key, as they allow for the consistent blend of carbon dioxide, water, and syrup in the drink, without requiring mixing after the fact.

"We knew the machine needed the ability to perfectly dose and mix the beverage so that we could deliver a consistent beverage time after time," DuLong told Business Insider. "We knew from experience with the hot system, that the only way to attract partners — people whose reputations in their beverage brand — was to guarantee that consistency time and time again."

All of this occurs in about 90 seconds. Then, the pod — including the beads — are discarded, and the user is left with a 39 degree glass of soda, seltzer, or cocktail mixer.

Here's why it failed.

A GE fridge with Keurig's hot brewer installed GE Appliances

Some of the harshest complaints from Kold users seem to be a result of this whole process. They said the Kold was too big, took a long time to cool down before its ready to use, and that it could be very noisy.

Because of the interconnected system used by the Kold, Keurig was unable to solve these problems. As a result, the device that once promised to be the future of the brand was instead simply a flop, despite the years of research and millions of dollars invested in the machine.

"We view our initial Kold system launch as a pioneering execution," Keurig said on Tuesday in a statement. "We learned a lot — including that consumers are willing to embrace the concept of a system that delivers fresh-made, cold beverages in the home — and we'll build our learnings into future beverage systems."