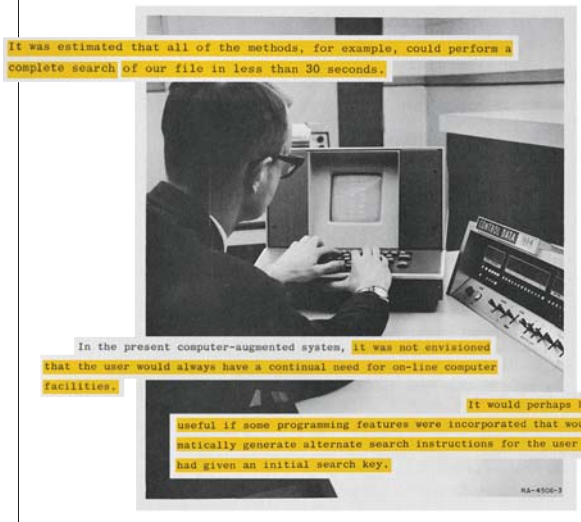
Origins

Search Happens

YEARS BEFORE THE BIRTH OF THE INTERNET, A FORGOTTEN EXPERIMENT LAID THE GROUNDWORK FOR GOOGLE

By **April White**



GOOGLE THE TERM "inventor of search" and the world's most popular search engine will, unexpectedly, fail you. Nowhere among the algorithmically organized results will you find the names of the two men who, in the fall of 1963, sent the first known long-distance computer query—six years before Arpanet, the proto-internet, and *lonnnnng* before the launch of the world-changing Google, 20 years old this month.

Even Charles Bourne himself, the research engineer who built that first online search engine with Leonard Chaitin, a computer programmer, forgot about the wacky experiment for about three decades. "We just didn't know what it could become," says Bourne, now 87 and a leading authority on the early history of automated information retrieval.

Bourne and Chaitin achieved their ahead-of-its-time breakthrough at the Stanford Research Institute in Menlo Park, California, with Air Force funding. At the time, most approaches to information retrieval were physical—for instance, data stored on punch cards and sorted by machine—but the Cold War demanded more efficiency, and the Air Force dreamed of quickly sifting through its trove of literature about Soviet technology.

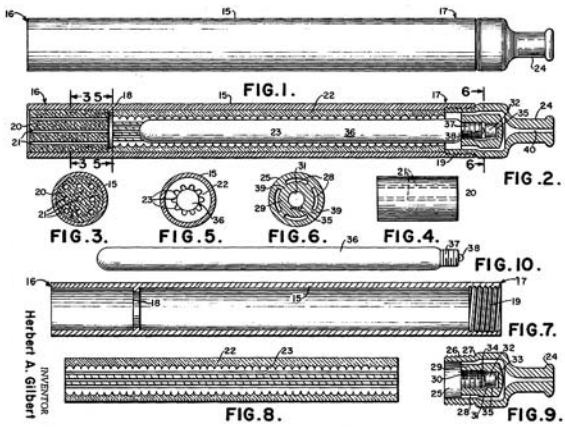
The duo's program was designed to work the way Google does: A user could search for any word in the files. Their database consisted of just seven memos that Bourne typed onto punched paper tapes and then converted to magnetic tape. Chaitin had flown to Santa Monica, 350 miles away, to input the files onto a massive military computer. From a bulky computer terminal with a screen just 32 characters wide, they sent a search query; the precise question is lost to history. The data lurched over telephone lines—your smartphone is more than 10,000 times faster—but after a long moment, the right answer popped up. Bourne and Chaitin had proven, for the first time, that online search was possible.

Despite the success, the Air Force shut the project down: The world just wasn't ready for this innovation. "You really couldn't imagine, at that time, doing a lot of things with a computer." ◆

Origins

Pipe Dream

PLANS FOR THE FIRST E-CIGARETTE WENT UP IN SMOKE 50 YEARS AGO



In 1963, Herbert A. Gilbert (above: shown in his 30s) filed a patent for "a safe and harmless means for and method of smoking."

IN 1963, A YEAR IN WHICH U.S. smokers burned through a then-record 523 billion cigarettes, a scrap metal dealer from Beaver Falls, Pennsylvania, invented a revolutionary alternative. "I call it the 'Smokeless,'" Herbert A. Gilbert, then a two-pack-a-day man, said of his little black aluminum cylinder with a silver tip—the world's first e-cigarette.

Created a year before the surgeon general's unprecedented "Smoking and Health" report linking cigarettes to lung cancer and other diseases, the Smokeless contained a liquid that was warmed by a battery-powered device, creating a vapor that a person inhaled. Gilbert touted the device's tremendous potential in preventing disease and death from tobacco use, and even promoted it for weight loss. Dieters, he said, could "smoke their favorite food." Among the ten vapor flavors he concocted were mint, rum and, his personal favorite, cinnamon.

But Gilbert never found a company willing to mass-produce his invention, and therein lies a classic American tale of an inspired tinkerer way ahead of his time: 55 years later, e-cigarettes are a $10 billion industry worldwide. Gilbert never made any money on his patent, now long expired.

Acknowledgment can be its own reward, though, and Gilbert's patent has been cited hundreds of times by other inventors, including Hon Lik, considered the father of today's e-cigarette. Gilbert, who is 87 and lives in Florida now, sounded pleased in a phone interview with *Smithsonian*, and said he was proud to be associated with an invention that has helped people quit smoking. "The only substantial thing I received was the satisfaction of saving millions of lives," he says.

Not that vaping is harmless, of course. In September, the Food and Drug Administration warned that millions of teenagers are becoming addicted to e-cigarettes, which carry their own health risks and could lead to a new generation of cigarette smokers. But Gilbert's original invention can't really be blamed for that problem. It had no nicotine.

COURTESY OF HERBERT GILBERT; USPTO

In 1969, the *New York Times* described Joe Cocker's air guitar as "unusual gesturing."

Origins

Air Apparent

AN ELECTRIFYING HISTORY OF THE WORLD'S MOST POPULAR INVISIBLE INSTRUMENT

By April White

JOE COCKER COULD FEEL THE MUSIC channeling through his body as he began his final number on the Woodstock stage. With one hand, the singer mimed the song's opening piano notes, and then, as the drums kicked in, Cocker lifted his left arm and swung his right in front of his body in perfect time with the dramatic first chords of his hit "With a Little Help From My Friends." The term wouldn't be popularized until the 1980s, but there, in front of hundreds of thousands of people, Joe Cocker was playing air guitar.

You could start the history of the invisible instrument at that formative moment in 1969, says Byrd McDaniel, an ethnomusicologist at Northeastern University. But McDaniel, who studies "air playing," has found the same impulse to embody music throughout history. In the 1860s, it was described as a symptom of mental illness, but by the 1930s, it was a mere curiosity, a side effect of the phonograph; some listeners, the Minneapolis Phonographic Society reported, had "taken to 'shadow conducting.'"

Since then, air playing has become a socially acceptable alternative for those who don't dance, says ethnomusicologist Sydney Hutchinson of Syracuse University. The practice crosses cultures; in the Dominican Republic, people pantomime the air güira, a metal percussion instrument. But only air guitar has also become an international spectator sport.

One of the first known air guitar contests took place at Florida State University in November 1978. Hundreds of students turned out to watch "Mark Stagger and the Rolling Bones" take first prize: 25 vinyl records. This August, top air guitarists from nearly a dozen countries will compete in front of some 30,000 people in Oulu, Finland, at the 24th annual Air Guitar World Championship. They will be judged on technical skills (which are different from those needed to play an actual guitar), stage presence and "airness."

Airness "is that spark of creativity. Someone who makes the song come alive," explains Eric "Mean" Melin, who won the 2013 world title by swinging his air guitar behind his back, Kip Winger style. "We want to express ourselves in a way that goes beyond what a 'there' guitar can do."

Also essential to being a great air guitarist: a sense of irony. "You have to know it's ridiculous," Melin says, "but also be really passionate about it." ◆