



The DEB Manufacturing Company, Farmington, New Mexico, ca. 1964. (Courtesy of Donald K. Breithaupt)

The “Thunderbird Keahoni” Reel

by
Steven K. Vernon

The answer to the “Pop Quiz in Physics” published in the last issue of Reel News is the “Thunderbird Keahoni” reel, which was produced by DEB Manufacturing Co., Farmington, New Mexico, during the early 1960s.

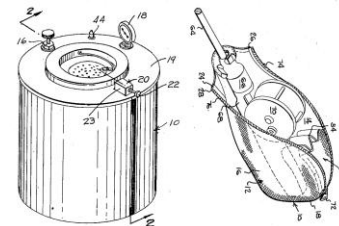
The “Keahoni” seems to travel with a suitcase full of collector lore, and all of it is true. This unusual single-action reel was the inspired creation of Donald E. Breithaupt, an inventive banker born in 1924, who had worked in Honolulu, Hawaii, and Modoc, Kansas, from 1949 to 1955, before he arrived at the First National Bank of Farmington. He already had designed a back-scratching device for cattle that helped them fight off insects. While in Modoc, he filed an application for a patent of an aerated bait bucket, and the patent was granted in 1956. By that time, as a Vice-President of First National, he was managing a newly established branch of the bank at Shiprock, N. Mex., the first full-service banking facility on the Navajo Nation, whose eastern border is about twenty-five miles west of Farmington.

Access to the facility and to sound financial advice was especially important during the 1950s, when the Nation was faced with critical concerns. In 1950, the Navajo Hopi Rehabilitation Act had begun to provide federal dollars to a program that lured Native Americans away from the Reservation with promises of urban employment. Navajo mineral rights again became a subject for debate after uranium was discovered on the Reservation in 1951. Starting with Utah, a number of states and the federal government began to “terminate” native tribes, thirteen of which lost federal protections and services, as new laws attempted to funnel their people into the “mainstream” of American society. The tribes were forced to sell reservation land to meet financial obligations until the Kennedy administration outlawed “termination” in 1962.

Donald Breithaupt’s work with the Navajos at Shiprock earned him the honor of becoming the first non-Native American

to be invited to a Tribal Council meeting. The Council originally had been established at the urging of the federal government to consent to mineral leases after oil was discovered on the Reservation in 1921. It had since evolved into a tribal governing body. The Navajos honored Breithaupt further by naming him “Dinah Bikis,” which means “Brother of the People.”¹

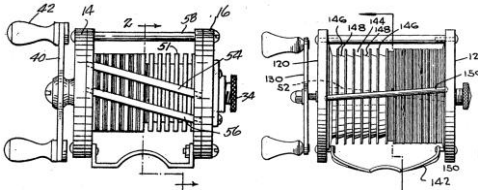
During the late 1950s, Breithaupt continued to devote his spare time to invention. In 1957, he filed a patent application for a protective reel cover that contained internal pockets for storing tackle. The patent was granted in 1959. He worked on the design of a map holder that could be mounted on a car’s steering wheel. In 1960, he applied for a patent of an improved slider for a slide fastener, or zipper, receiving the patent in 1961. Most importantly, he filed a patent application, on September 12, 1958, for the fishing reel that would be brought to market as the “Thunderbird.”



Patent drawings of Breithaupt’s aerated bait bucket and reel cover.

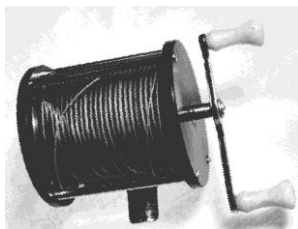
The alternative designs presented in the patent application included the major feature of the reel, a spool with a thick, grooved arbor. Allegedly, the unique spool enabled level-winding and eliminated line tangling in a reel with only one moving part. The theory behind the spool design is explained in

some detail below. The original application included both single-action and multiplying versions.



Two versions of Breithaupt's reel as shown in his patent drawings. The reel on the left has two slanted line rollers and a flangeless spool with narrow, square-bottomed grooves. The drawing on the right is the later design used for the "Keahoni," with spool flanges, wider grooves with slanted bottoms, and a single, slanted line roller. The patent included drawings for a multiplier, as well.

On February 13, 1959, Breithaupt registered a newly founded company with the State of New Mexico. DEB Manufacturing Company was established primarily to assemble fishing reels based on his 1958 design and to arrange for their distribution. The authorized capitalization of the firm was \$250,000. The original officers and directors included Breithaupt, (President), Harold Curtis (Vice-President)², of Shiprock, and Owen R. Hammons (Secretary-Treasurer), Farmington. Hammons, employed by the Bureau of Indian Affairs, developed a training farm for the Navajos and administered loans to its graduates. The company raised capital through the sale of stock, some of which was bought by the good people of Farmington. Long-range plans included manufacturing the bait bucket, the reel cover, and even a salt-water version of the reel. In November of that year, the company licensed the rights to manufacture and sell Breithaupt's inventions.



An early "Thunderbird" reel with a metal spool and narrow grooves. (Courtesy of Donald K. Breithaupt)

The story of the company's next couple of years is unclear. A part-time staff of local Navajos assembled reels "as needed" from parts manufactured by Ajax Die Casting and Manufacturing Co., Tulsa, Oklahoma. The dies used by Ajax were owned by DEB Manufacturing. Where the assembly was carried out is not known, but reels were being sold by July, 1959.

I believe that these early reels implemented the designs presented in the first patent application. Unlike the later, more familiar reels, the original "Thunderbird" reels may have had

metal spools with narrow grooves, like the reel shown in the accompanying photograph. It probably was one of these reels that Breithaupt sent to President Eisenhower sometime in 1959 or 1960.



Page of a DEB brochure featuring John Wayne's endorsement of the "Thunderbird" reel. (Courtesy of Donald K. Breithaupt)

Breithaupt took a major step forward when he submitted a second patent application for his reel on August 12, 1960, while abandoning the original application. The new design included what would become the reel we collectors know and love—the "Thunderbird Keahoni." It is likely that reels manufactured after that date incorporated the new features, which are described below.

In January, 1961, Donald Breithaupt dared to resign his position at the First National Bank of Farmington so that he could devote himself full-time to the development, manufacturing, and distribution of his fishing reel. Shortly thereafter, he sent an example of his improved reel to Pres. Eisenhower, who by then had left office.

Taking another major step toward marketing his product, Breithaupt presented a reel to John Wayne, while the legendary star was making a film in nearby Monument Valley.³ "The Duke," an avid fisherman, was so smitten with the reel that he not only agreed to endorse it, he became a shareholder in the firm.⁴ Wayne's portrait appears on some early DEB brochures, and he apparently used the reel successfully in Alaska and elsewhere. The actor's contract with the company, signed on November 7, 1961, specified that he would be paid for his endorsements with royalties from reel sales.

The inventor began to promote his reel vigorously and personally, and it gained favor among a surprisingly wide range of celebrities during the next couple of years. Arthur Godfrey, another serious angler, wrote to say that "I never was more sincerely interested in anything," after Breithaupt demonstrated the reel on his radio show. Godfrey publicly presented a "Keahoni" at the dedication of a new Izaak Walton League

chapter clubhouse in Virginia.⁵ The inventor appeared on other major shows, as well as on various local radio and TV shows around the country. An appearance on NBC-TV's "Today" show with Hugh Downs and Jack Lescoulie marked the high point of the promotional campaign. Sports and outdoor writers from all over, including Byron Dalrymple, praised the "revolutionary" reel, as did gridiron great Kyle Rote.



Donald E. Breithaupt (left) demonstrating his reel to Mr. McMurtry of WSJS-TV, Winston-Salem, N.C. (Used with kind permission of WSJS/WXII-TV. Courtesy of Donald K. Breithaupt)

The reel was touted as representing "the first basic change in casting reels in one hundred and fifty years. This reel does more things for more people than any single design in fishing reels in the entire history of fishing."⁶ Best of all, these modest deeds were accomplished with an extremely simple design! The undated promotional piece from which these words were taken stated that three-thousand five-hundred of the reels already were in use in this country. The patent for the reel was finally granted on December 11, 1962.



V.I.P.'s of DEB announcing company plans to the press in the autumn of 1963. Shown from left to right are Owen Hammons, Secretary-Treasurer, Charles Patten, local official, Don Breithaupt, President, Harold Curtis, Vice-President, and Oscar Thomas local official. (Farmington (N. Mex.) Daily Times photo, reprinted by permission, courtesy of Donald K. Breithaupt)

On August 1, 1963, DEB Manufacturing signed a one-year lease for a building on East Main St. in Farmington, which previously had been occupied by a popular supper club.³ The Farmington Daily Times covered the ceremony in which the keys to the building were turned over to the company officers. "Keahoni" reels would be assembled in the renovated factory by a part-time staff of local Navajos, until the time that a full-time staff was required to manufacture reels, bait buckets, and reel covers. During the same month, Breithaupt terminated his licensing agreement with DEB and assigned his three patents to the company.



DEB employees assembling "Keahonis" under the watchful eyes of company officers and others. Harold Curtis, Vice-President of the company, stands at the far left, and Don Breithaupt is the tallest person in the back row. Others could not be identified. (Courtesy of Donald K. Breithaupt)

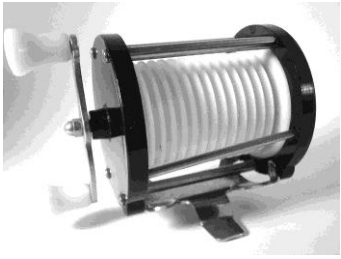
In September, 1963, DEB Manufacturing was authorized to raise its capitalization to \$500,000. The company issued additional shares of common stock and simultaneously announced a stock split. The offering circular for the stock issue stated that the company had sold \$8954.53 worth of fishing reels between July 1, 1959, and December 31, 1963. The makeup of the management had changed by the time the circular was issued in 1964, Joseph Ziems having replaced Harold Curtis as Vice-President. In addition, the company had purchased three lots of undeveloped land in anticipation of expansion.

In spite of the heady, initial success of the "Keahoni," DEB Manufacturing Co. officially closed on October 6, 1965. Whatever the reason, bankruptcy or otherwise, its closing must have been a dream-shattering occasion for many of Farmington's and Shiprock's citizens, especially for the inventor himself.

Donald E. Breithaupt died in an automobile accident in Colorado in January, 1968. A colleague explained to a reporter³ that the inventor always hoped that he never would have to say in retrospect, "I wish I had done this."

The defining feature of the "Keahoni" was its plastic spool, whose thick arbor carried narrow annular grooves along its length. Coupled with the slanted line roller that spanned the

frame, the spool design was the key to the “periodic cycles of action” that Breithaupt described in his patent application.



The later, more familiar “Thunderbird Keahoni,” made mostly of Delrin and stainless steel.

The line was tied in the groove farthest from the crank. As it was wound up, it filled the groove, then spilled over into the next groove, filled the second groove, and so on. The spool was considered full after the line had been carried only once across the length of the arbor and all the grooves were filled with line. The slanted roller in front of the spool facilitated the spilling of the line from one groove to the next, and the line was “level-wound” within each filled groove.



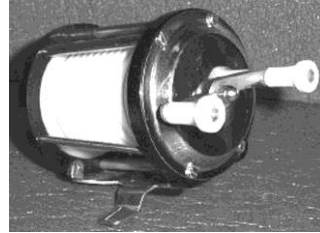
The “Keahoni” tailplate, showing the “Thunderbird” trademark.

The “periodic cycles” are best explained by describing the cast. When the line flows from a spool at a given speed, the rotational velocity of the spool varies with the diameter of the coil of line on the arbor. As the line is drawn off at a constant speed, the spool spins faster and faster. (The inertia of the spool is the cause of backlash when the line ends its trip.) The “Keahoni” was designed so that, during the cast, spool speed accelerated as line was withdrawn from top to bottom of the first groove. When the outgoing line then began to flow from the top of the second groove, the spool speed decreased, then increased again as the second groove was emptied. This “periodicity” of spool rotation continued until the cast was ended.

Line retrieval also behaved periodically. The angler cranked the spool at some given rate, and the line was drawn in at varying rates of speed as it filled each groove and spilled over into the next.

DEB appears to have produced at least three versions of Breithaupt’s reel. The metal-spoiled reel mentioned above was probably a very early model whose narrowly grooved spool was based on the designs in the first patent application. Another model, labeled “Keahoni,” employed a plastic spool with wider

grooves and plastic sideplates that were protected by slightly raised, aluminum rings. The third model, the most familiar to collectors, lacked the aluminum rings.



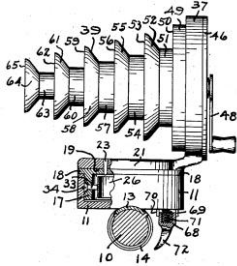
An early version of the “Keahoni” with aluminum rings protecting the plastic sideplates. (Photo by Earl L. Critchlow)

One significant design change made in the second patent application was that the bottoms of the spool grooves of the single-action reel were slanted, i.e., frusto-conical in their entirety, rather than parallel with the spool axis. The line roller was slanted in a direction opposite to the slant of the groove bottoms. The opposing slants were supposed to prevent overshooting of the line as it spilled over from one groove to the next. In addition, a second slanted roller was attached behind the spool so that a left-handed fisherman could use the reel by merely mounting it “backwards” on his rod.



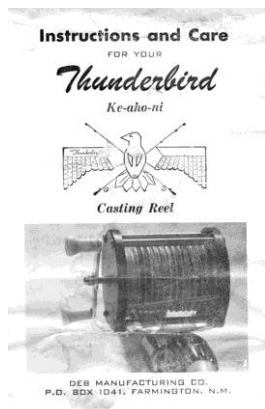
Closeup of the “Keahoni” spool grooves, showing the slanted bottoms.

As unusual as the “Keahoni” was, the design was not entirely without precedent. In 1950, John E. Mitchell, of Indianapolis, Ind., had patented a “swiveled stepped bobbin fishing reel,” a bizarre spinning reel with a spool that swiveled to alternating casting and retrieval positions. The spool itself had five “stepped” grooves of different diameters. The retrieved line was wound first around the smallest, distal groove. When that groove was filled, the line spilled into the second groove, and so on. In addition, the spool was wobbled just enough on its axis during cranking so that the line was “level wound” within each groove. During casting, the line left the largest, proximal groove first.



One of Mitchell's patent drawings of his swiveled, stepped spinning reel

DEB's "Thunderbird Keahoni" was a light-weight reel made of stainless steel and Delrin, according to the accompanying brochure. It was touted as trouble-free, and DEB offered to refund the purchase price if the line ever became tangled enough so that it had to be cut free.



The cover page of the brochure packaged with the "Keahoni."

The name of the reel has an almost mystical quality. The box is labeled only "Thunderbird," and a "Thunderbird" trademark is shown both on the box and on the reel. (I have not been able to find records of trademark registrations for either "Thunderbird" or "Keahoni.") The reel also is marked with "Keahoni," and the brochure refers to the "Thunderbird Keahoni Casting Reel." It explains that "Keahoni" is "a beautiful Navajo Indian word which can be translated any number of ways, but which means generally: 'Universal peace, contentment, tranquility while fishing.'" Sounds good to me.

Footnotes

1. Unsigned draft for what appears to be a press release or article for the Farmington (N. Mex.) Daily Times, undated. Courtesy of Donald K. Breithaupt.
2. Curtis was named as Vice-President of the company in an article in the Farmington Daily Times, whose date is unknown but which was published before the company moved into its new factory.
3. Darren Marcy, Farmington Daily Times, Sept. 27, 2001

4. "Breithaupt's Reel Catches On," Farmington Daily Times, pg. A2, Oct. 18, 1962.

5. Arthur Godfrey, letter to Don Breithaupt, Apr. 10, 1963. Courtesy of Donald K. Breithaupt.

6. Unsigned draft for promotional document, undated. Courtesy of Donald K. Breithaupt.

Acknowledgements

I am grateful to Darren Marcy, Outdoor Editor of Farmington's The Daily Times, for his help and advice, and, especially, to Donald K. Breithaupt for his willingness to share generously his family history and photographs for use in this article.