

## Dentist granted patent for new orthodontic device

*By Mardi Suhs*

CADILLAC - Patients would never guess, as orthodontist Roger Bandeen leans toward their mouths, that their hometown dentist is also an engineer who helped design computer weapons and defense systems for the military.

And who would ever guess, after visiting Bandeen's quiet office where dental chairs overlook large, sprawling oak trees, that he worked with military and university research teams to pioneer systems like word processing, digital communication, floppy discs, voice recognition and the hardware for Air Force One.

A soft-spoken and modest man, Bandeen's engineering background recently came to light after he was granted a patent for the invention of a new orthodontic device.

In his practice as an orthodontist, Bandeen was frustrated with an appliance he inserted into the mouths of young patients. Designed to widen the upper jaw, the RPE, rapid palatal expander, had flaws. It often slipped. Sometimes it had to be replaced.

"Mom and dad came in upset and irritated," the orthodontist said from his Cadillac office, Bandeen Orthodontics. "They are supposed to be getting the best and it's less than the best."

As a dentist, the design flaw annoyed him. As an engineer, the design flaw challenged him. And so Bandeen did what engineers are trained to do - he redesigned the product to eliminate the problem that he said "plagues our world" - frictional torque. After coming up with what he thought was a better mousetrap, Bandeen needed a way to test his design, so he contacted the MSU Department of Mechanical Engineering and offered to sponsor a project for the senior mechanical engineering students.

The Design Laboratory at MSU invites these partnerships to give students hands-on industrial design experience. They accepted Bandeen's challenge to redesign an orthopedic expander by meeting a list of nine criteria.

When the designs were completed, they were evaluated.

"They throw all the designs into an engineering matrix and the one with the highest score is the winner," he explained. "Mine came out on top. That's what I wanted to see. You validate your design that way and have fun doing it."

Next, he applied for a patent, which he called a very unique process.

"This is a long, detailed process," he sighed. "It took us more than two months just to get the drawings and descriptions in the format they needed. Two years later, they said I was rejected."

His patent attorney assured him that the first rejection is standard. With a second submission, they had a platform for debate and defense of the product.

With no word from his attorney or the government, Bandeen suddenly discovered he had been granted the patent when a glossy advertising sheet arrived in the mail, asking if he would like to order a plaque to celebrate U.S. Patent 7331781. He looked it up and discovered his patent was awarded Feb. 19.

Now he faces the daunting process of finding a manufacturer who can produce the niche market product for a cost-effective price.

"We're checking on the manufacturing right now," he explained. "But Michigan doesn't have the technology to do this here. I have to find a partner, take it to international meetings, and hit the trade shows. I am still in the process of finding out what it's going to cost to get this done."

From having the idea to securing the patent took years. There are more hurdles ahead. But Bandeen is not discouraged.

"I personally think if you have the ability, time and resources to make a change in a product, process or service, you need to be a difference maker. That's what makes the world a better place. Don't sit on your ideas. If they can help - be willing to persevere."

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Meet Roger Bandeen

When Roger Bandeen entered college, his career goal was to combine computer skills with Air Force ROTC pilot training to become a test pilot and astronaut. But when the Vietnam War ended, the resulting pilot surplus ended that dream.

Upon graduating from the MSU College of Engineering in 1972, Bandeen entered the military and was assigned to the electronic systems division at Hansom AFB and other high-level bases around the country.