



## From Idea to Invention

**W**here does an idea for an invention come from? For one individual, it had its beginnings during an incident in which almost three dozen inmates freed themselves from restraints in a darkened holding area. For another, it just popped into his head while thinking about roller coasters as he lay in bed one night. For another, it came from being surprised and confronted in close quarters by a felon wielding a—fortunately unloaded—12-gauge shotgun. And for another, the idea resulted from a chain of events that involved land mines, an earthquake in Turkey, and Archbishop Desmond Tutu.

### A Hand on Handcuffs

When it comes to moving or transporting a group of inmates, it is not an unfamiliar sight to see an officer with metal handcuffs bulging from every pocket of the uniform or dangling from a waistband. Although these creative methods of carrying multiple pairs of handcuffs can be crudely effective, they certainly, according to Herman Hendrickson, are not convenient, comfortable, or safe.

Hendrickson has no experience as a correctional or police officer, but his son Dahl and daughter-in-law Kimber have. Both are correctional officers at the Federal Transfer Center in Oklahoma City. Both have worked in segregation units. Dahl also has been involved with a Special Operations Response Team. In their careers, Dahl and Kimber have had plenty of experience moving inmates from one area to another. They understand and appreciate the problems that can arise when trying to handle a dozen or so pairs of handcuffs while at the same time managing a dozen or so inmates. But what really drove the problem home for the Hendrickson family was an incident involving Dahl in which almost three dozen inmates freed themselves from their restraints.

Dahl says that during a “cuff up” of 35 inmates following a disturbance, the prisoners were able to free themselves from the flexible plastic-type of handcuffs. He says they were able to do so because a number of the flexible cuffs were not applied properly due to low-light conditions.

“Plastic flex-type cuffs have the advantage of being less bulky and lighter weight than metal cuffs,” Dahl

says. “But what happened was that in the low light the cuffs got secured around the hand with the thumb sticking out instead of securely around the wrist. This made it very easy for some of them to slip them [the restraints] off. Fortunately, the inmates were in a secure area.”

Herman Hendrickson says that what was needed was something that allowed quick and easy access to a number of sets of handcuffs. In addition, it should afford the officer greater protection by removing the chance that a prisoner could gain access to unsecured handcuffs.

Based on these requirements, Herman Hendrickson came upon a disarmingly simple idea—CUFFCLIP™, a handcuff carrying device. Resembling a large, heavy duty spring clip, CUFFCLIP™ can be quickly attached to an officer’s duty belt. Reversible for use on either the right or left side, the device can hold up to 13 pairs of metal handcuffs attached by a single wristlet or up to seven pairs with the wristlets doubled.

“When you are ready,” Dahl says, “you select the first set of cuffs on the CUFFCLIP™, slide them to the opening

### HERE TO HELP

Have an idea but don’t know what to do with it? There is help.

Bringing research and private industry together to put affordable, market-driven technologies into hands of law enforcement, corrections, and the forensic sciences is the major focus of the National Institute of Justice’s Office of Law Enforcement Technology Commercialization (OLETC).

“OLETC’s job is to identify new technologies and product concepts and then to work with innovators and industry to develop, manufacture, and distribute new, innovative products,” says Bill Patsche, a former police

*Continued on page 2*

of the clip, pull the handcuffs forward, and in a few seconds you have a single pair ready while the others stay in place. We believe the device will work for all aspects of law enforcement—prisoner movement and transport, mass evacuations, disturbance control situations, and prisoner processing.”

## A Prisoner’s Place

What keeps thrill seekers safely in their seats while taking on some of today’s wild amusement park rides may find its way into the back seats of police cruisers, according to 17-year police veteran Kevin Mobley of the Lufkin (Texas) Police Department, who came upon the idea one night while lying in bed thinking about roller coasters.

“I thought if those padded metal harnesses they use on roller coasters can keep someone safely in their seat while going 60 miles an hour and upside down,” Mobley says, “why wouldn’t they work in police cruisers?”

So with some perseverance and some engineering assistance, he turned this idea into the IMMOBILIZER, a device to safely keep prisoners seated upright and in place while being transported.

Although on the surface the design seems very simple, it was of great concern, Mobley says. “As any police officer will tell you, the ‘adrenaline dump’ you experience after being in a fight with a violent prisoner is tremendous. Although the fight may end quickly, especially when there is backup, your heart has been pumping adrenaline through your body. You’re still going at 90 miles an hour. The fight is over, but the adrenaline is still looking for something to do. That’s what often causes heavy breathing, sweating, and anxiety and causes your hands to shake uncontrollably. The design of the IMMOBILIZER takes these physical reactions into account.”

Mobley says that many prisoner restraint systems employ nylon straps and small clips and buckles. He feels these devices are deficient for two reasons. One, the nylon straps would slip through the plastic buckles, and two, it can be extremely difficult for officers to manage small clips when they are experiencing an adrenaline dump.

The IMMOBILIZER, he says, is instead a metal pivotal restraint harness that is heavily padded and attached to a patrol vehicle just above the back seat. The harness, which is brought down over the prisoner’s shoulders and torso, is operated by a ratchet system. It can be activated by one officer standing outside the patrol vehicle, thus eliminating the necessity to put a seatbelt on the prisoner, which often places an officer in danger. The harness keeps the upper torso of the prisoner upright and firmly against the back of the seat. In addition, Mobley added a

### *Here to Help* (continued)

chief now involved with OLETC’s law enforcement technology commercialization initiatives. “Facilitating these partnerships is so critical to making technology commercialization happen that this is what we are all about. Our staff includes law enforcement and corrections professionals, project and commercialization managers, plus engineers and technical and market research specialists.”

At no cost to the inventor or innovator, Patsche says, OLETC can assist with:

- Market assessments and commercialization plans.
- Location of manufacturing and distribution partners.
- Issues relating to liability, intellectual property, and licensing.
- Elimination of barriers to market entry.

In addition, OLETC offers commercialization planning workshops that target technology innovators. These workshops, conducted three or four times a year, are designed to provide participants with the tools and knowledge necessary to assist OLETC in the commercialization of their technologies and concepts.

Each year, OLETC also conducts the National Commercialization Conference. This conference brings law enforcement and corrections personnel together with national technology innovators and manufacturers to stimulate new product commercialization. In addition to technology exhibits, the conference offers workshops on commercialization skills.

OLETC, the Moundsville (West Virginia) Economic Development Council, and the West Virginia Division of Corrections sponsor a mock prison riot once a year in the former State penitentiary in Moundsville. The “riot” showcases emerging corrections and law enforcement technologies and provides corrections officers and tactical teams from across the country with an opportunity to use and evaluate emerging technologies in riot training scenarios. Ultimately, the event helps determine the effectiveness of the technologies by incorporating them into realistic situations and allows for suggestions for modification and improvement.

***To learn more about the commercialization assistance services and special events offered through the Office of Law Enforcement Technology Commercialization, contact Bill Patsche at 888-306-5382 or log on to JUSTNET, the website of the National Law Enforcement and Corrections Technology Center, at [www.nlectc.org](http://www.nlectc.org).***

strap, similar to a seatbelt, which is secured to the floor of the vehicle and then attached to the bottom portion of the device to keep a prisoner from slipping underneath the harness.

“By keeping the upper body firmly in place,” Mobley says, “I think this device can help eliminate many of the common problems encountered while transporting violent prisoners, such as kicking or head-butting the windows.” In addition, Mobley says the device can provide added restraint and protection for the prisoner should the cruiser be involved in a traffic accident.

## A Stick With a Twist

Talk to almost any law enforcement officer and he or she will tell you of a close call. Talk to Jim Alexander, a member of the New Brighton, Minnesota, police force, and he will tell you about a foot pursuit that took him around the corner of a building and face to face with a 12-gauge shotgun.

“I had no way of getting to my revolver,” Alexander says. “I needed something to distract him. I had my nightstick in hand, but it was too short. He was standing out of reach.”

Fortunately for Alexander, the weapon aimed at him was unloaded.

In another incident, Alexander says two officers on a domestic disturbance call from another area department shot a suspect they thought was reaching for a knife after they confronted him in his kitchen. This shooting, Alexander says, may not have happened had there been less-than-lethal options available.

Based on these and other experiences on the street, Alexander says he struck upon a less-than-lethal option he calls the Life Stick®.

For more than 100 years there have been attempts to combine nightsticks, or batons, with other law enforcement equipment, such as ballistic weapons. Alexander says, however, that Life Stick® actually affords a number of different less-than-lethal defensive features.

According to Alexander, Life Stick® is a combination nightstick and shell-firing device with an internal firing mechanism. It comprises a club portion that houses an internal barrel, and a handle portion that is movable to actuate the shell-firing mechanism. The internal shell-firing mechanism is cocked and released by a single rearward motion to the handle. In addition, the handle can be “twisted” to engage the safety. Conversely, the safety can be released by a simple simultaneous push of the safety “button” and a reverse twist of the handle. Designed to handle 12-gauge specialty rounds, the device can fire a bean bag, a rubber projectile, teargas, or pepper spray.

The standard Life Stick® is almost 22 inches long, but Alexander also has designed a model with a lengthened barrel for use in riot situations.

“You call the shots,” Alexander says. “The idea here is not only can you use it like a nightstick, but you have the capability of firing a less-than-lethal round. It increases your options. It also is applicable for use not only in law enforcement but corrections and the military as well.”

Alexander has taken his invention to a number of different departments to get their feedback. He says these field evaluations have shown that when an officer is carrying the Life Stick® in hand, the device can be cocked and ready for firing faster than an officer can remove a firearm from a holster. Other feedback has included suggestions to make the device lighter and quicker loading. These changes are currently in progress.

But Alexander is not finished with inventing. He says he has a “couple more ideas rattling around” relating to less-than-lethal inventions. As for Life Stick®, he says that although it has been in development for a number of years, some of which involved modifications of the prototype from its original 20-gauge configuration to one that can handle 12-gauge specialty rounds, “if it saves one police officer’s life, it was worth all the work.”

## A Body by Any Other Smell

She is a retired U.S. Navy commander who served in the Office of Naval Research. She also is a biochemist specializing in neuroendocrinology—the how and why of smell. After just a few minutes into a conversation with Dr. V. Ruth Pinney, one begins to get this mental image of her stirring a boiling cauldron and tossing in the likes of newts’ eyes and toads’ ears. But Pinney laughs at such a picture. “Actually,” she says, “I have created some interesting things.”

One of the “things” Pinney created is Carry-On™, an ointment applied to the upper lip, directly under the nose, to block the receptors that detect the unforgettable, repugnant smell of decomposing or burnt flesh. But as is sometimes the case with inventions, Carry-On™ was a kind of accident.

Pinney’s original assignment came from a discussion with Archbishop Desmond Tutu of South Africa during her days as the director of the Global Children’s Foundation, a group involved in the transfer of technology for the benefit of the world’s children.

“We were discussing the problem of antipersonnel land mines because the archbishop was heading up a worldwide committee to get them banned,” she says. “I began thinking of substitutes that would be effective in keeping people out of an area but would cause no bodily harm.

My background led me down the path of using olfactory stimulation agents [malodorants].”

Pinney says that the sense of smell lies in the most primitive portion of the brain areas. “It is our first sense, our most immediate sense. It evokes much stronger emotional behaviors and memories compared to our other senses. Many of our behaviors can be modified simply by using different odors.”

Her initial idea, a “skunk mine,” was to assault the sense of smell, albeit with something so benign even a pregnant woman and her in-utero child would be unharmed. The result was a substance that smelled so obnoxious it could clear an area in seconds. In politically correct terms, she says, the technology is called “language independent signaling. This is because no language is used to communicate the sender’s message.”

According to Pinney, one law enforcement officer who tested the malodorant stated, “It stinks so bad it makes your teeth hurt. You don’t have to explain what it means.”

“With a malodorant, you can use it to clear an area or funnel people where you want them to go,” Pinney says. “You could also spray it on the instigator of a riot. Everyone will run away, while the instigator just looks silly, running around ripping his clothes off, trying to get the smell off of him.”

Pinney says that ironically, while she was experimenting with malodorants, she had a niece who was in Turkey following a major earthquake. The niece relayed to her how horrific the smell was that came from the rubble and debris as the corpses of the earthquake’s victims began to decompose. Pinney reasoned that if you can create something that smells so awful, “by doing the chemistry” you could create something to counteract the smell.

**The National Law Enforcement and  
Corrections Technology Center System  
Your Technology Partner**  
[www.justnet.org](http://www.justnet.org)  
800-248-2742

Therefore, if the odor of decomposing or burned flesh can be created, it can also be counteracted.

Carry-On™ was the serendipitous result. Instead of a horrible, obnoxious smell, Carry-On™ smells faintly of vanilla. When rubbed on the upper lip, just under the nose, it minimizes the perception of the smell of decomposing flesh while allowing the user to smell everything else. When the scent starts to wane, that’s the signal to apply more.

“Perceiving an odor is somewhat analogous to listening to music. Carry-On™ changes a note or two in ‘the chord,’ which changes the perception of a certain odor but lets you ‘smell’ the rest of the symphony,” Pinney says. “Because one can safely and quickly achieve behavior modification through the nose, ‘scents make sense’ for law enforcement and corrections applications.”

***[Editor’s Note: The citing of the products in this article does not constitute an endorsement by the National Institute of Justice or the U.S. Department of Justice. The individuals featured in the article are receiving commercialization assistance from the Office of Law Enforcement Technology Commercialization and have participated in many of the special commercialization events the Center sponsors.]***



This article was reprinted from the Spring 2001 edition of *TechBeat*, the award-winning quarterly newsmagazine of the National Law Enforcement and Corrections Technology Center system, a program of the National Institute of Justice under Cooperative Agreement #96-MU-MU-K011, awarded by the U.S. Department of Justice.

Analyses of test results do not represent product approval or endorsement by the National Institute of Justice, U.S. Department of Justice; the National Institute of Standards and Technology, U.S. Department of Commerce; or Aspen Systems Corporation. Points of view or opinions contained within this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, Bureau of Justice Statistics, Office of Juvenile Justice and Delinquency Prevention, and Office for Victims of Crime.