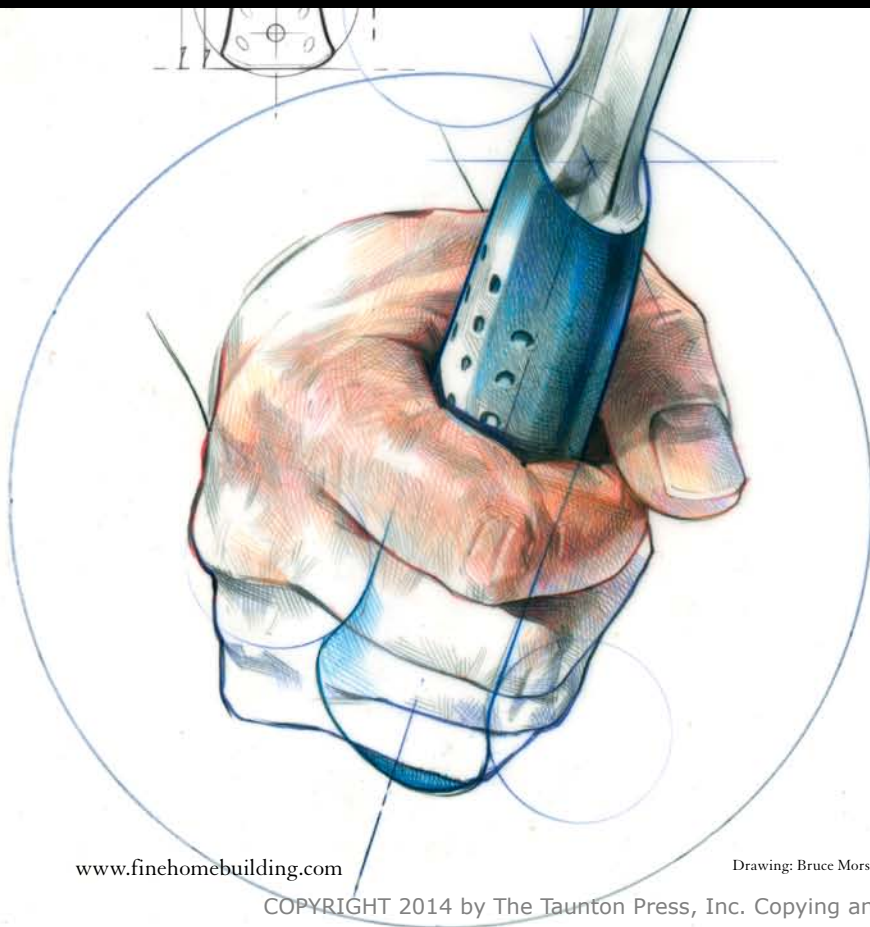


HAMMERED

From rocks to titanium, hammer design has a rich history

BY AARON FAGAN

The first nail I ever drove was with my father's hammer—a True Temper A16 Rocket, which he had won in a nailing contest at an annual picnic for the hardware dealers of Rochester, N.Y., in 1963. His instruction to me that day sounded quite simple. He said, “It’s all about letting the hammer do the work.” I am certain that, like anyone wielding a hammer for the first time, I must have made a rather sad scene: There I am, holding the hammer too tightly, my hand and arm singing with vibration; choked too high on the handle; missing, repeatedly; the bent nail mirroring my defeat with its head slumped down; and, ultimately, that ancient rite, the Dance of the Purple Thumb.



That was 30 years ago, and the art of letting the hammer do the work is one I will not master. Still, my story illustrates that hammers, and our history with them, are personal to us. The carpenters I know think that their hammer is the best hammer, and they are happy to tell you why. But hammers, too, have a story to tell. Their designs have evolved over the millennia, always moving us closer to that goal: letting them do the work.

Still building Rome

We humans have had some time to think about hammers. Even in the Stone Age, there was great sophistication in choosing the right stone for the job, and much later, the right stick, bone, or antler to tie the stone to with sinew or other materials. But it was not until the Roman Empire that a nailing hammer emerged. Dating from the first century, it had a wood handle attached to a metal head with a striking surface on one side, and a split, curved claw for pulling nails on the other. The Romans made extensive use of nails for construction, and it's a legacy that persists in our nail-sizing system: The "d" stands for the Roman coin denarius, which was presumably worth ten donkeys. Nails were priced per hundred, so one hundred 8d nails was equal to 80 donkeys. At that cost, the ability to extract and reuse those nails seems self-evident.

For centuries afterward, the head and the handle underwent countless interpretations from blacksmith to blacksmith, but these were slight modifications from that Roman design. While the use of steel for hammerheads is thought to date back to the Romans, the widespread use of hickory for handles did not occur until the mid-19th century in America. (Hickory is unique for its strength, density, and excellent shock resistance.) From the beginning of the tool's history, the single greatest design challenge was keeping the head securely affixed to the handle.

Revolutionaries

Around 1840, a carpenter in a small crew hired to build a church in Norwich, N.Y., realized he had left his hammer back home. The local blacksmith was David Maydole, who had been experimenting with hammer designs. (Even though the Industrial Revolution was newly underway in the United States, hammers still came from blacksmiths.) Maydole was frustrated by the tendency for hammerheads to fly off, and he tried to do something about it. Inspired by the extended eye of an adz—a tool similar to an ax—he added a tapered neck to wedge the handle inside the head, resulting in the adz-eye hammer. As the story goes, the carpenter was so happy with Maydole's hammer that the rest of his crew decided to order them. Word spread, the local store ordered some, and a New York City tool merchant placed a standing order with Maydole for as many hammers as he could make. Though Maydole never patented his adz-eye hammer, in 1845 he founded the David Maydole Hammer Co., which grew to be one of the largest hammer manufacturers in the United States.

In Fly Creek, N.Y., a mere 40 miles away from Maydole's operation, another inventor, Henry Cheney, introduced a nail-starting system near the claw, which he patented in 1871. That, however, is not the design that made his name famous. The popular Cheney Nailer was introduced in 1927, a full 50 years after Henry Cheney's death. That hammer was based on a modified patent by Arthur Taylor and Scott Hinman of Elyria, Ohio, and was disingenuously marketed as the "world's standard since 1836." This would have meant that Cheney

DON'T FLY OFF THE HANDLE

While David Maydole's adz-eye hammer better secured the head to the hickory handle, handles still broke, requiring a tedious replacement. Todd Coonrad's Douglas design offers both overstrike protection and the ability to more readily change the handle.



**Douglas
DFR-2016**

Head: stainless steel
Handle: hickory
Weight: 20 oz.
Cost: \$80

started making this hammer when he was 15 years old. In addition, Cheney's patented design was for cut nails, whereas the Cheney Nail-er's nail starter required wire nails, which didn't come into standard use until 1910.

Cheney's conception of a "hammer that holds the nail"—however indirectly—is at work today in the many modern hammers with a magnetic nail-starting feature. And just as the essence of the Roman claw hammer has endured, so too has Maydole's adz-eye hammer.

The head/handle problem was revisited in 1926 by Ernest Estwing, who introduced a virtually indestructible, forged hammer made from a single piece of solid carbon steel with a lacquered grip made of stacked leather rings. Estwing's design was one of many as a new age of invention dawned. Countless inventors flooded the U.S. Patent and Trademark Office with ingenious modifications and interpretations of the tool.

Postwar promise and the age of science

Hammers are a time capsule containing a compression of history. For example, four-clawed hammers, designed to reduce damage in extracting costly nails for reuse, became popular during the Great Depression. After World War II, a booming economy and new fascination with science meant that hammers would be designed in a completely different way.

During the 1950s, a growing middle class was realizing the promise of the American Dream for the first time, leading to an unprecedented demand for housing. This ushered in a period of reimagining the hammer to meet those demands. Rather than a single crew building one house from start to finish, there emerged framing crews, whose sole charge was to get a house framed quickly and accurately for finish crews to complete. The common hammer—with its short handle, smooth face, and curved claw—had exhausted its potential in this setting and came to be classed as a finish hammer, to be used for tasks less intensive than rough carpentry. Framing became a task for what is now known as the California framing hammer.

Framing hammers began as rigging hatchets, which were the primary tools workers in California used to make wood oil derricks before World War II. A rigging-hatchet head has an ax blade on one side and a short-necked milled hammer face on the other. It is balanced, grabs nails well, and has a heavy head weight for lots of striking power. It has a long hickory handle that is either straight or curved with an adz eye or a teardrop-shape (single-bit) eye. For many carpenters, the downside of using a rigging hatchet for home building was the dangerous blade (unions banned them) and the tool's inability to extract nails efficiently. Crews began replacing the blade with the claws from old hammers. The late Larry Haun, after he had seen a modified hatchet on the job, had his first one made in 1954. The legendary carpenter wrote about this in 2006 ("One Carpenter's Life," *FHB* #177): "I took my Plumb rigging hatchet home and cut off the blade with a hacksaw. I had an old Estwing hammer that supplied the claws. I took the pieces to a friend who had an electric arc welder in his garage, and he put the parts together. Although my hammer was a rough-looking tool, it was now safer to use, and I could drive framing nails easily with one lick. The straight-claw, long-handle California framer was born."

Bob Hart, a Los Angeles framing contractor, was one of the first to manufacture these hammers. He began his business by selling his hammers to lumberyards out of the trunk of his car. The popular-



THE HAMMER THAT HOLDS THE NAIL

Henry Cheney was the first to conceive a hammer with a nail starter in the head, a feature that is nearly standard on modern tools such as this DeWalt, a lightweight steel hammer that gives titanium tools a run for their money.



DeWalt
DWHT51135

Head: steel
Handle: steel
Weight: 14 oz.
Cost: \$50

ity of California framing hammers grew through exemplary designs by such makers as Vaughan and Dalluge, and now virtually every manufacturer offers some version of the tool.

Where job-site ingenuity created the California framing hammer, 20th-century science sought to remedy the shortcomings of the solid-steel hammer. Although these hammers were an incredibly strong alternative to wood hammers and were better for pulling nails, they were heavy and provided very little shock absorption. Until this time, little, if any, consideration had been given to the end user. Most previous innovations did not go much beyond getting a hammer to drive a nail without breaking. Arm fatigue, the amount of force expended, and comfort were only of peripheral concern.

In 1955, Plumb introduced the first hammers with fiberglass handles as an alternative to wood or steel. The same year, True Temper introduced the Rocket my father would win in 1963, which boasted a steel-tube handle with a rubberized grip. Hammers such as these signaled the dawn of products marketed as utilizing “space-age technology.” Their handles were designed to be shock resistant, ergonomic, stronger than wood, and lighter than solid steel. They were still on the heavy side, however, and did not provide the clarity of sensation that nailing with a wood handle offers. Hammerheads were now being offered with either curved or straight (rip) claws and smooth or milled faces. This period saw the rise of many new hammer designs and materials and also introduced new avenues for refining and building on that progress.

Clash of the titans

As the study of ergonomics matured, researchers could measure how hammers actually work and then develop ways to change them. For example, they were now able to determine the force required to grip a hammer and to understand the way a hammer distributes force when it strikes; this in turn helped them find ways to curb vibration, increase striking velocity, and optimize the sweet spot on the hammer’s face. This continuing quest for a better tool shows how far we have come in our story from rocks tied to sticks, but also how little has changed. A hammer’s primary function is still about driving nails and extracting them, but there are other functions a hammer needs to do just as well. A hammer needs to pry boards apart and knock elements into alignment. It’s also one of the principle tools for demolition work. Each role calls for specifications no single hammer contains. In an attempt to address as many of these roles as possible, manufacturers in the late 1990s introduced materials such as titanium, graphite, and carbon fiber, and features such as side nail pulls, magnetic nail starters, and interchangeable (milled or smooth) faces.

Because you can swing it faster, a hammer with a titanium head can work just as well as one with a steel head. A titanium hammer transfers 98% of the energy from swinging the hammer to the nail, and does so with dramatically less shock than a steel hammer, which transfers only 70% of that energy to the nail. The two principle complaints are that titanium is five times as expensive as steel, and that titanium hammers are cast as opposed to forged. Stiletto Hammers does offer a removeable steel face, which serves several purposes. Steel makes a more durable face than titanium, but the face can also be switched from milled to smooth or replaced when it wears down.

A nearly standard feature on modern hammers is a magnetic nail starter at the front of the hammer, which was first introduced in 1995 on a production-made framing hammer designed by Mark Martinez.

DO ME A SOLID

In 1926, Ernest Estwing introduced a virtually indestructible, forged hammer made from a single piece of solid carbon steel with a lacquered grip made of stacked leather rings. In 2001, Mark Martinez began selling the TiBone, the first solid-titanium, lightweight framing hammer.



**Stiletto
TB15MC**

Head: titanium
Handle: titanium
Weight: 15 oz.
Cost: \$170

In 1999, after acquiring the Stiletto trademark and production rights, he began selling the first titanium-head framing hammer. In 2001, he produced the first solid-titanium hammer, called the TiBone.

DeWalt, owned by Stanley Black & Decker, makes a 14-oz. hammer designed to deliver the striking power of a 28-oz. hammer. To add strength, the hammer is made by MIG-welding two forged pieces of steel together. Stanley has a long history of putting end-user feedback to use in its hammer designs and has made fervent innovation a central part of its design strategies. The company's innovations include graphite handles, shock reduction in its steel hammers through its AntiVibe design, and grips with grooves for sweat to run off.

Possibly the height of aesthetic and functional design in the hammer so far comes from Todd Coonrad. He has a background in industrial design, but it was through his work as a contractor that he began to question and reimagine the hammer. Like many carpenters, Coonrad preferred hickory handles but grew tired of replacing broken ones. In 1995, he developed a unique head-to-handle assembly that not only allows handles to be changed more readily, but, by creating a channel in the handle for the head to slide into, offers overstrike protection, increasing the longevity of the handle. The steel head features both a magnetic nail starter and a side nail pull. Coonrad has had licensing agreements with several manufacturers over the years including Hart, Vaughan, and Dalluge, but now he also produces his impeccably crafted hammers through his own company, Douglas (photo, p. 74).

Despite all of this innovation—from the prehistoric discovery of a better striking rock, to Maydole's more secure hammerhead, to today's ergonomic wonders—one truth of hammer design has remained constant: The form of a claw hammer expresses a powerful metaphor of our human ability to revise and create. There is forgiveness of the past in the claw, and hope for the future in its face. □

Aaron Fagan is copy/production editor. Photos by Rodney Diaz, except where noted.

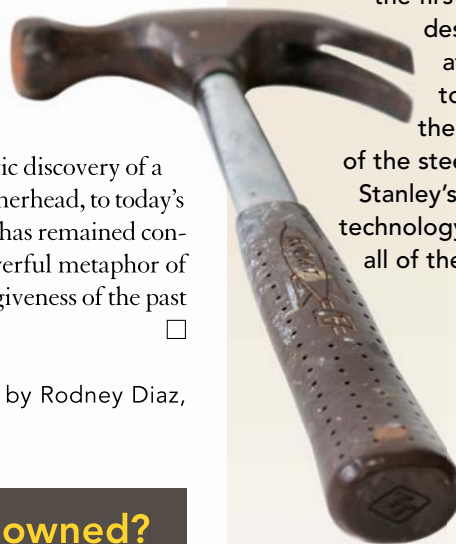
Best hammer you've ever owned?

Readers respond on *FHB's* "Breaktime" forum

"I've only owned about four different hammers, but the Stiletto TiBone Mini-14 I have now is my favorite. It weighs less on your belt, swats nails easily whether you're swinging normally or upside down and left-handed, and has a replaceable steel face to make it 'new' again and a soft rubber handle so your arm doesn't get jarred." —Waters

"I like the leather handle of the Estwing for the cool factor, but I set it aside and pick up the nylon-handled one for everyday use. The main reason for using the nylon one is that once I sanded off the embossed weight/model info on the butt of the handle, it made a nice rubber mallet to bump things into position, snug things up, etc." —AichKay

"I love my 14-oz. Stiletto curved handle. That said, the true winner of the personality contest is my True Temper Rocket, straight claw. At 40 years old, it's still part of my daily arsenal." —KenHill3



GOOD VIBRATIONS

The True Temper Rocket was one of the first hammer designs that attempted to dampen the vibration of the steel handle. Stanley's AntiVibe technology exploits all of the benefits of steel.



Stanley
FMHT51244

Head: steel
Handle: steel
Weight: 17 oz.
Cost: \$40