

Hidden Fasteners

Prongs, tracks, biscuits, or clips, these attachments are here to stay



by Andy Engel

Who came up with the first hidden decking fastener is open to debate. Weston Leavens remembers first seeing them in a magazine sometime around the end of the Reagan administration. A screw or nail affixed the clip to the first board and to the joist, and the second board was driven onto a prong protruding from the first clip.

At the time, Leavens was the owner of one of the largest deck-building companies in San Diego. Intrigued,

he ordered a box of the fasteners and used them to build a display deck for the annual home show. “The deck moved and squeaked,” says Leavens. “It was embarrassing. I thought we’d done something wrong, so I called the magazine and eventually got in touch with the author. It happened that the deck featured in the article wasn’t far away, so I arranged a visit. Well, it squeaked and moved, too, but the owners didn’t seem to mind.” That experience led Leavens to invent the

Deckmaster, a track system that he began to use in his own business in about 1989.

That was a fertile time for the hidden-fastener industry. Sometime in the early ’90s, Harry Eberle was working on a high-end house in Hunterdon County, N.J., and as seems common with busy builders, his mind was in two places at once. While he was using a biscuit joiner to put together the cabinets, he was also noodling out the best way to fasten down the furniture-grade ipe for the deck. In that circumstance, I’d probably have managed to misalign a couple of biscuits. Eberle invented the EB-TY.

Concealed deck-board fasteners now come in a variety of flavors. It seems that the prong type was the first, followed by tracks, biscuit systems, and, recently, clips that either interlock or fit in grooves cut down the sides of the boards. The newest development is composite decking systems that come grooved for a proprietary clip from the manufacturer. Ipe and other hardwoods may be available locally with similar grooves milled in. As with nearly any product, some users get good results, and others don’t. Below are a few things to consider, to make the most of hidden fasteners.

Exposure

All hidden fastener systems solve one obvious problem, which is that of being exposed. It’s more than just an aesthetic issue. The movement of wood or composite decking that’s been exposed to the rigors of the outdoors commonly results in nails or screws standing proud of the surface of the board. That’s a trip hazard, as well as a minor annoyance to those inclined to take a snow shovel to their deck.

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Movement

All deck boards move, but in different ways that depend on the material. Wood expands and contracts mostly because of changes in moisture content. Composite decking, on the other hand, expands and contracts with changes in temperature. Deck builders ignore these facts at their own risk.

Wood decking should be installed at a moisture content that's appropriate for the climate. For example, if you install kiln-dried decking in, say, coastal Washington, it's going to

movement. Several people I interviewed for this article spoke of experiences where decks built with a variety of concealed fasteners moved and creaked. A conversation with Frank Woeste, Ph.D., P.E., professor emeritus at Virginia Tech, confirmed one possible reason for this.

Traditionally built decks, where 6-inch nominal decking is nailed or screwed with two fasteners to each joist, are stiffened against lateral movement by the diaphragm this construction creates. This is similar

building it." It's indisputable that time and weather take their toll on outdoor structures. One method to give any deck — whether built with concealed fasteners or not — a shot at a long, safe, and creak-free life, is to build redundantly with lateral bracing. Doing so becomes more important as decks increase in size, because larger decks and higher columns exacerbate any movement.

I would consider adding cross bracing below the joists, or beefing up the angled braces between the deck's support posts and its main beam, and I'd ask my structural engineer to consider this issue in his design. Additionally, some manufacturers recommend using an adhesive such as Liquid Nails or PL 400 with their hidden fasteners to improve the performance of the decking as a diaphragm, and to alleviate potential squeaking.

Water

One other potential issue is common to most hidden fasteners and to all exposed fasteners. In time, water can follow these fasteners down and into the heart of the joist, where the preservative often doesn't reach. It makes sense that this process would shorten the life of joists and decking. Leavens is certain of this, and claims one advantage of the Deckmaster to be that its screws are installed in the side of the joists, not the top. Another response to this concern would be to use one of the self-sealing joist tapes on the market.

Time

The final issue that's raised when talking about hidden fastening systems is labor. I don't think anyone in the industry would argue with the statement that it takes longer to

“The tightest any deck will ever be is on the day you finish building it.” – Weston Leavens, inventor of the Deckmaster

expand. It can expand enough across the grain to buckle, no matter what type of fastener you use. Go to a drier area and install wet decking, and you can count on it shrinking. Anecdotally, that can be a particular problem with some biscuit and pronged types of fasteners. In some cases, boards are said to have shrunk enough to disengage from the fasteners. Using lumber that has the correct moisture content for the climate should avoid such problems.

Composite decking that's installed at a high ambient temperature will shrink as the weather cools. Install it in the cold, and it will expand as the temperature rises. Pay attention to the manufacturer's instructions regarding installation in extreme temperatures.

Structure

Since we're talking about wood movement, we should also discuss deck

to how a house floor is stiffened by the plywood sheathing, and although the strength gain offered by 6-inch planks isn't what you get from 4x8 sheathing, it's still significant.

Concealed fasteners may not provide the same rigid fastening that creates the diaphragm effect in a traditionally built deck. In fact, due to plastic's high coefficient of expansion, many fasteners that are intended for use with composite decking are designed to allow the decking to expand along its length. Attaching decking in a way that allows movement by definition will lend less rigidity to the structure. It would appear that only systems that rigidly attach each deck board in two places to each joist could come close to replicating the diaphragm created with 6-inch decking and exposed fasteners.

Leavens says, “The tightest any deck will ever be is on the day you finish

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install concealed fasteners than to use a nail gun or a collated screw gun to fasten decking from above. The solution is to sell hidden fastening systems as the upgrade they are.

Manufacturers are aware of the time concerns, as well. Some of the newer

systems claim labor savings over earlier concealed fasteners. Initial reports regarding the labor savings offered by the pre-grooved composite lumber systems, for example, seem positive. Paul Mantoni, a Connecticut deck builder who's been using Tiger Claw

fasteners for some time, says that their new TC-G fastener, privately labeled as Fiberon's Phantom, "saves a ton of time."

Andy Engel is the editor of Professional Deck Builder.

THE PLAYERS

■ Pronged-Clip Systems

BEN Manufacturing

Dec-Klip

www.dec-klip.com
425/776-5340



The Dec-Klip is a toothed, galvanized clip that's nailed or screwed into place. One fastener enters the side of the deck board, and another is driven into the joist. An outward-facing prong penetrates the edge of the next

board as it's driven in with a sledgehammer. It's fully galvanized after stamping so that all edges are protected. The deck boards are raised slightly above the joists.

Simpson Strong-Tie Company

Deck-Tie

www.strongtie.com
800/999-5099



Before installing a deck board, the galvanized Deck-Ties are nailed to its rear-facing edge so that they'll be an inch or two away from the joists. The front edge of the previous deck board is

secured to the joists with toenails or screws, and the Deck-Ties on the second board slide below the first board. Toenails or screws in the second board tighten up the system.

Southland Fence Company

Invisagrip

www.invisagrip.com
281/355-0707



This T-shaped, stainless-steel fastener, a German-made system, has prongs on both sides. A couple of taps with a hammer and a block sets one prong of the Invisagrip into the first board; the Invisagrip is then screwed

down to the joist. A proprietary tool squeezes the next board onto the outer prongs of the first board's fasteners, and the process repeats. A set of two tools costs \$600, but means not having to sledgehammer the boards onto the fasteners.

Tiger Claw

www.deckfastener.com
800/928-4437



Tiger Claw offers a variety of fasteners for softwoods, hardwoods, composites, and grooved boards, in stainless steel or powder-coated. Except on the grooved-board fastener (the TC-G), the dual-pronged clips work pretty much the same on all the versions. A proprietary block is used to drive the fastener

into the first board, the fastener is toe-screwed to the board and the joist, and the next board is driven onto the exposed prongs. The TC-G is not much different, except that instead of driving prongs into the edge of a deck board, the wings on the TC-G simply hook into pre-milled grooves in the boards.

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■ Interlocking Clips

FastenMaster
FastenMaster IQ
www.fastenmaster.com
800/518-3569



Working from above with the deck board upside down, you screw two polycarbonate IQ clips to the bottom of the board, centered approximately over each joist. You then flip the board over, and the inboard clip interlocks with the one on the previously installed board. The outboard clip is screwed to the top of the joist.

M.M. Products
Invisi-Fast
www.invisifast.com
866/766-9427



Made from Lexan, a strong, clear plastic, Invisi-Fast clips screw to the side of the joists, minimizing water intrusion. The deck board is laid in place,

and the clips are screwed to the joist and to the bottom of the decking. A spacer, available in several sizes, sticks up between the boards.

Sure Drive USA
Hidden Link
www.suredrive.com
866/767-1850



Hidden Link is a new product from Sure Drive. Working with the board upside down, you attach the inboard clip to the bottom of the deck board. The board is flipped over, and the inboard clip slips below the previous

deck board. The outboard clip is screwed to the side of the previous deck board and then to the top of the joist. It is currently available only in powder-coated steel; a stainless-steel version is in the works.

■ Biscuit Systems

EB-TY Hidden Deck
Fasteners
EB-TY
www.ebty.com
800/438-3289



EB-TY started out with one polypropylene fastener designed to fit in #20 biscuit slots cut in the sides of the deck boards. A screw down through the center of the EB-TY affixed the board to the deck, and the next board

would slide onto the EB-TYs. The basic idea has changed little, but there are currently nine versions intended for a variety of composites and hardwoods, including for pre-grooved composites.

The Ipe Clip Company
Ipe Clip
www.ipeclip.com
866/427-2547



This is another biscuit-type clip. The manufacturer claims that its round shape offers more latitude during installation than the competing fasteners do. Made specifically

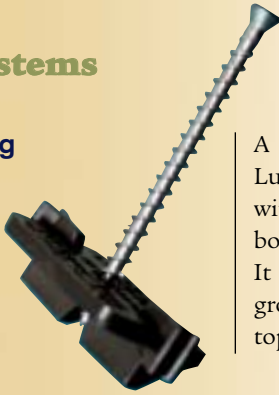
with the idea of holding down ipe, a tough, tough hardwood, the Ipe Clip is made from fiberglass. The Extreme version is reinforced with a stainless-steel washer.

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Biscuit Systems

KK Manufacturing

Lumber Loc Exotic
www.lumberloc.com
913/908-9445



A copolymer blend of polypropylene, the Lumber Loc Exotic is claimed to be designed to withstand expansion and contraction along both the length and the width of the decking. It installs in either biscuit joiner slots or grooves milled in the boards, and screws to the top of the joists.

Track Systems

Grabber Construction Products

Deckmaster
www.deckmaster.com
800/477-8876



Available in a powder-coated version for most applications and a stainless-steel version for coastal use, the Deckmaster screws to the sides of the joists and the bottom of the decking. It comes in 22¹/₂-inch lengths that accommodate four nominal 6-inch deck boards. Installation requires either access from below, or working upside down from above.

Sure Drive USA

Shadoe Track
www.suredrive.com,
866/767-1850



Shadoe Track is nailed or screwed to the tops of joists. Deck boards are attached with screws from below, and, again, access from below or lots of bending at the waist is called for. It comes in 8-foot lengths in galvanized, powder-coated, and stainless-steel versions.

Specialty Nails

Spotnails

TEBO
www.spotnails.com
800/873-2239



The TEBO is a three-pronged, stainless-steel connector that's driven with a special tool (\$300) and a mallet. When you drive it in, one prong enters the first deck board and the second enters the joist below — both at an angle that leaves the third prong parallel to the joist. With the first board secure, the next board is driven onto the third prong using a sledgehammer and a block. ❖

Combination Decking and Fasteners

CertainTeed

Boardwalk Signature HFS
www.certainteed.com
800/233-8990

Correct Building Products

CorrectDeck Fastenator
www.correctdeck.com
877/332-5877

Elk Building Products

Sabre Clip
www.elkcorp.com
866/322-7452

Latitudes

Equator Slotted Decking
www.latitudesdeck.com
877/463-8379

Alcoa Home Exteriors Oasis Hidden Fastener System

www.oasisdeck.com
800/962-6973

TimberTech

CONCEALoc
www.timbertech.com
800/307-7780