

Mastering Mounting

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CPF, GCF



Do You Know Hardware?

As professionals, custom picture framers should always strive to use the most appropriate framing materials and promote the best and safest way to enclose and exhibit any customer art. That said, there are numerous old school methods still in use, even when better options exist. Familiar hardware such as sawtooth hangers, screweyes, spring clips, and wire may be used because they are inexpensive options. However, small

alterations in hardware or wire selection can significantly increase the stability and safety of custom framing. And a framing package and hanging system is only as dependable as its weakest link. So let's talk hardware.

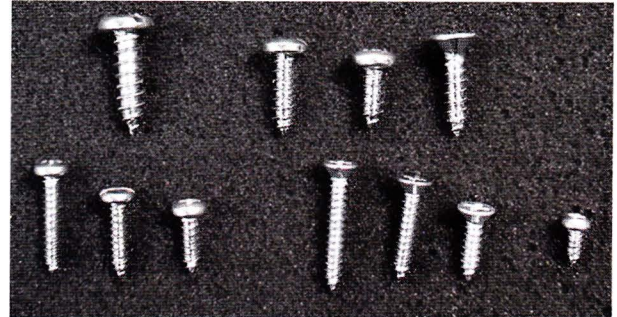
Framing hardware is

something all framers understand, right? The wire needs to be heavy enough, the screw eyes large enough, and the screw long enough to keep the frame on the wall. But armed with a clearer understanding of the technical aspects of hardware, any framer can make better decisions about what to use. Starting with a few tips and a little basic terminology, you can develop a clearer understanding of the best choice available. Sometimes a few changes in options can make your hardware choices stronger and more dependable.

Screws

Shaft Weight or Gauge

The industrial world most often uses gauges to designate the thickness of sheet metal, the diameter of



Top row (L-R): Round head #8x3/4"; Pan head #6x1/2", #6x3/8"; Flat head #6x5/8". Bottom row: Round head 4x5/8", 4x1/2", 4x3/8"; Flat head 4x3/4", 4x5/8", 4x3/8"; Round head tiny #3x1/4"

wire, and the size of a screw shaft. The professional numbering system for fasteners (screws) may seem confusing as it is based on shaft dimensions and threading, but to simplify identification of smaller, more commonly used screws, a number designation preceded by the # sign, such as #4, has been adopted. These numeric sizes represent standard shaft diameters based on sizes commonly in use in the hardware market. They don't show the number of threads per inch, which is common for most other sizes, and run from #0 through #15, with #0 the smallest and #15 the largest. In framing, #4, #6, and #8 are most common, with #3 and #10 occasionally needed.

Types and Configuration

For framing purposes, screws are identified and selected by shaft # (#3, #4, #6, #8); category (Wood, Metal, Machine); head style (Flat head, Pan head, Round head); and drive (Phillips, Slotted, Combination). Wood screws have a coarser pitch (fewer threads per inch) than sheet metal or machine screws and often have an unthreaded shank below the head. The threadless shank allows a top piece of wood to be pulled flush against the under piece without getting caught on the threads. They are available with flat, pan

The right hardware or wire selection can significantly increase the stability and safety of custom framing



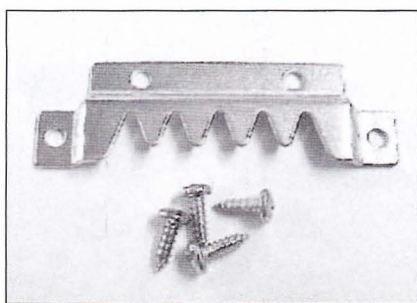
Wood screw with no threads at top (L), metal screw is threaded full length (R).



Slotted drive, pan head (L), Combination drive, pan head (C), and Phillips drive, flat head (R).

or oval heads. Metal screws (sheet metal screws) have sharp threads that cut into a material such as sheet metal, plastic, or wood. They make excellent fasteners for attaching metal hardware to wood because the fully threaded shaft provides good retention in wood. Machine screws--generally not used in framing--are blunt-ended, generally stronger than wood screws, have finer threads, and are used with nuts or tapped holes.

There are many head styles, with flat head, pan head, and round head being the most common for framing. Flat head screws are used when countersinking so the head is flush with the wood surface (or slightly recessed), leaving nothing protruding. Round head screws have a domed shape, while pan head screws have a slightly rounded head with short vertical sides. The pan head is successor to the round head and is slightly flatter with greater thickness near its circumference than the round head. This supplies more surface area for the driving bit to grip compared to the round head, especially for slotted or flat drivers. Pan head or



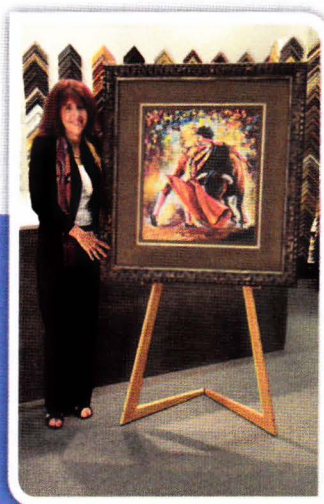
Mega Sawtooth Hanger with 4 #8x1/2" screws

round head screws are most commonly used with D-rings, D-straps, and steel plate hangers.

There are many drive configurations, but the straight slotted, Phillips, and combination are the most common in framing. A slotted drive screw is the traditional style that is installed with a standard flat screwdriver. Henry F. Phillips, a businessman from Portland, OR, is credited with the invention of the screw style named after him in 1930. The importance of the screw design is its self-centering property, which became extremely useful on automated production lines that used automated screwdrivers. The combination drive (cross slot) was originally designed for versatility during installation by either straight or Phillips screwdriver. Some foreign screws still use this design. Hardware purchased out of Canada often has a combination drive pattern.

Matching the correct screw shaft #, head, and drive can greatly simplify installation of anything. Phillips screws are much less likely to slip than slotted screws when driving with manual or electric driver. Tiny #3 round head metal screws are best to hold small sawtooth hangers rather than tacks. The smaller #4 and #3 Phillips head (PH) screws often require a smaller PH#1 screwdriver or an electric driver tip for installation rather than the usual PH#2.

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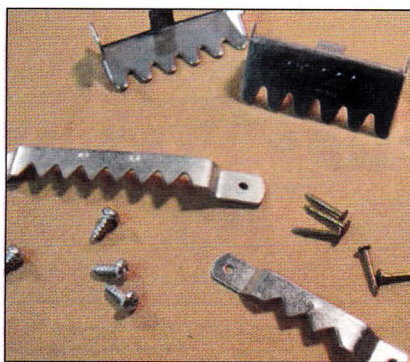
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Using too large of a driver may strip the drive head. Stocking 12 different sizes of screws may sound like a lot until you realize that there are four different shaft weights with a variety of lengths and drive patterns—all serving specific needs.

Sawtooth Hangers

There are many variations of the sawtooth hanger, but the typical one is a jagged edged metal strip from 1" to 3-1/2" long and resembling a saw edge. Unfortunately, sawtooth hangers get quite a bad rap because of hanging failure. It's not the weakness of the metal strip that is at fault but rather the softness of the moulding and the type of fastener. Sawtooth hardware may be purchased bulk or with 3/8" to 1/2" nails or #4 or #6 screws. AMS (Art Materials Service) has a great selection of Screw It regular, large, and raised sawtooth hang-



Snap-in sawtooth hangers for metal frames (top) and long and short sawtooth hangers for wood frames.

ers designed for #4 or #6 screws. Its Economy Sawtooth and Nail It Sawtooth hangers can be purchased in bulk without nails and smaller #3 screws substituted. Frameware also carries a variety of sawtooth hangers in bulk or supplied with #6 screws, which work well for medium weight frames.

Picture Hang Solutions sells the Mega Sawtooth Hanger, which is designed for mouldings 1" and larger. It measures 1" high and 3-1/2" long,



(L to R) Small #3x1/4" wood screw; #3x1/4" metal screw; #2x3/8" brass metal screw; 3/8" tack and 1/2" tack.

is made of 14-gauge steel, and uses four #8x1/2" screws to attach. Unlike standard sawtooth hangers, which are intended for use on relatively light pictures, this hanger, when properly installed, will support well over 100 pounds as long as the frame can support the stress of that weight at the installation point and the wall hanger is mounted into a stud.

The so-called "nailess" sawtooth hanger, on the other hand, should be avoided by professional framers. When wood is soft enough that a hanger can be pressed into it, the hanger can be pulled out just as easi-

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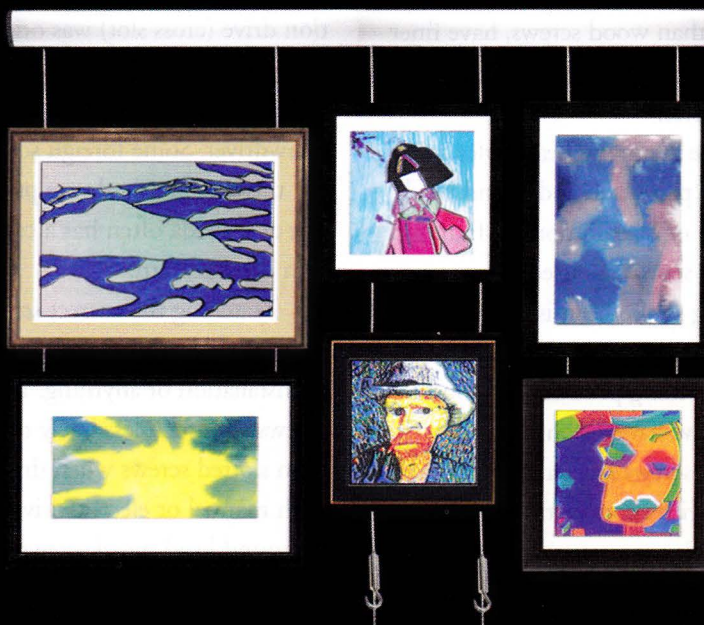
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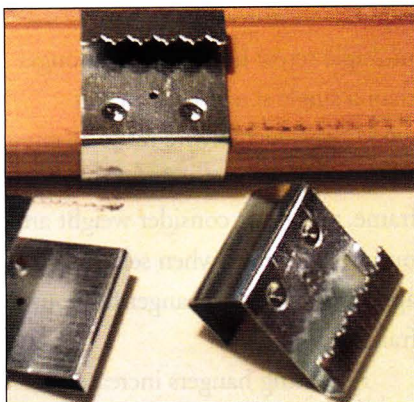
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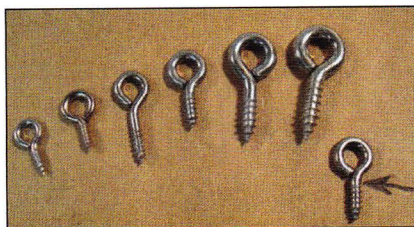
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Canvas sawtooth is designed for gallery wraps.

ly. The same holds true for the 3/8" and 1/2" tacks that are usually supplied with sawtooth hangers, which may be pressed into wood but can also pull out easily. A simple solution is to replace the tack with a small #3x1/4" or #2x3/8" metal screw to insure that a hanger will not pull out. You can use an awl to create a hole that will get the threads started. Then, using a PH1 tip on a 4.8V rechargeable battery screwdriver, set it snug. It is difficult to locate tiny #2 or #3 screws, but Bear Woods Supply from Canada is a great resource. And using screws with sawtooths is the only way to depend on the strength of the hardware.

There are also sawtooth hangers developed for specific uses including Canvas Hangers and Flush Mount Sawtooth for stretched canvases. Both of these target art studios rather than galleries and custom framers, however. The attachment to the canvas is secure enough by screwing into the bars, but display security can still be an issue. There are also snap-in sawtooths designed for use with



The eye is only as strong as the neck between the threads and the loop.

metal frames that are very strong and, once properly inserted, cannot fall out. That said, galleries generally do not accept framed art using sawtooth hangers of any kind because of hanging system restrictions and the potential for art to be knocked off the wall.

Screweyes

A screw with a looped head is called an eye screw, eye hook, screw eye, or screweye, with larger ones sometimes called lag eye screws. They are designed to be used as an attachment point, particularly for something that is hung from it, and are an all-in-one piece of hardware that screws into the back of a frame for attaching wire. Screweyes are now rarely used by custom framers, though they are still favored by hobbyists and artists.

There are many reasons for reconsidering the use of screweyes. When an eye screw is twisted into wood, it is generally held by the loop or a tool is inserted to spin the loop. When it is installed into hardwoods like maple, oak, or walnut, stresses occur at the transition point where the screw meets the eye, weakening it. If too small an eye screw has been selected for too hard of a wood, the

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eye has been known to twist off from the inserted screw. In soft woods such as pine or in MDF, the threading can create sawdust rather than grabbing the wood grain as it is inserted. This allows the screw to pull out. Remember, hanging hardware is only as strong as its weakest link.

Insertion of a screweye strong enough to hold most standard frames forces the frame away from the wall. The eye rubs against the wall, leaving a mark. And if the eye is close to the exterior edge of the frame, it may be visually unpleasing. Screweyes also greatly stress the sides of a frame where they are inserted, weakening the wood on thin or narrow frames and easily splitting dry wood if not predrilled. The best replacement is a comparable D-ring.

D-Rings

Single-hole hangers are available as mini D-ring hangers, ring hangers and heavy duty D-ring hangers. Narrow D-ring and strap hangers are a lightweight type of hanger that has a D-shaped steel ring held by a doubled-over steel strap. They are avail-



Mini and standard D-ring hangers, single & double; D-ring (at left) is designed for metal mouldings.

able as one-hole and two-hole versions designed to be installed using standard #6x1/2" screws. Small triangular head mini D-ring hangers are as small as 1/4"x3/4" for use with #2 or #3 screw up to 1/2"x3/4" with #3 screw.

Typical single-hole D-ring hangers are marginal for medium-weight frames and, depending upon the size of the hanger and screw, might be limited to lightweight frames. Narrow strap hangers are generally 5/8" wide in assorted lengths from 1-1/4" to 1-3/4" for #4x1/2" screws. Single hole D-rings can also pull out of soft wood just like a screweye. So

it stands to reason that a hanger with multiple screw holes will be stronger than a single screw, even in soft wood. And just as wire must be rated at three times the weight of the frame, you must consider weight and number of screws when selecting the appropriate D-ring hanger for your frame.

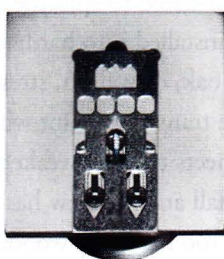
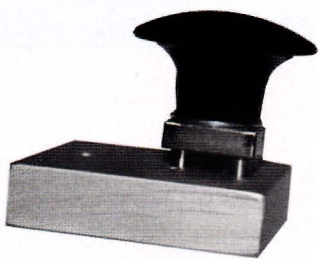
As D-ring hangers increase in size, the metal they are made of is heavier and the holes are larger for heavier gauge screws. When used with picture wire, D-ring and strap hangers should be positioned on the back of the frame at an angle that roughly matches the angle of the picture wire when the picture is hung.

Final Fit

All in all, it really matters that the correct hangers and screws are selected for fitting hardware. Screws should always be used instead of nails and should be selected in relation to the weight of the framed art. Pay attention to the softness or hardness of the frame moulding and use single- or multiple-hole hangers with the proper shaft and length screws. Use of multiple screws spreads out the stress and neutralizes the potential for hardware failure. ■

In the next column, wire, steel plate, and flanger hangers will be covered.

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