



**Lee Badger.** *Dragon Bell Striker.* Photo, Frank Herrera. *Dragon Bell Striker Installation View.* Photo Courtesy of Durward Center. Bell Striker Dragon was a project related to an historic clock. In this case, the clock was being installed in a brick row house, and the owner requested an imaginative bell support and striker for the building's exterior. The dragon was conceived by engineer, designer, and artist blacksmith Paul West. The dragon's eight-foot wingspan and six-foot body length provide support for the vintage 110 lb. cast bronze bell. The dragon's tail is the bell striker. A Seth Thomas #16A tower clock movement inside the building pulls a striking cable that runs through the wall into the dragon's body and tail. Badger and West created the dragon in Badger's shop and installed it under the direction of clock specialist Durward Center. To create the wings, hot-hammered steel sheet was welded to forged ribs. Individually shaped scales cover a structural armature that forms the dragon's body. The belly scales were made from sections of 11 gauge copper plate. The dragon's head also conceals structural framing with sheet steel and forged facial features and 2" ball bearings for eyes.





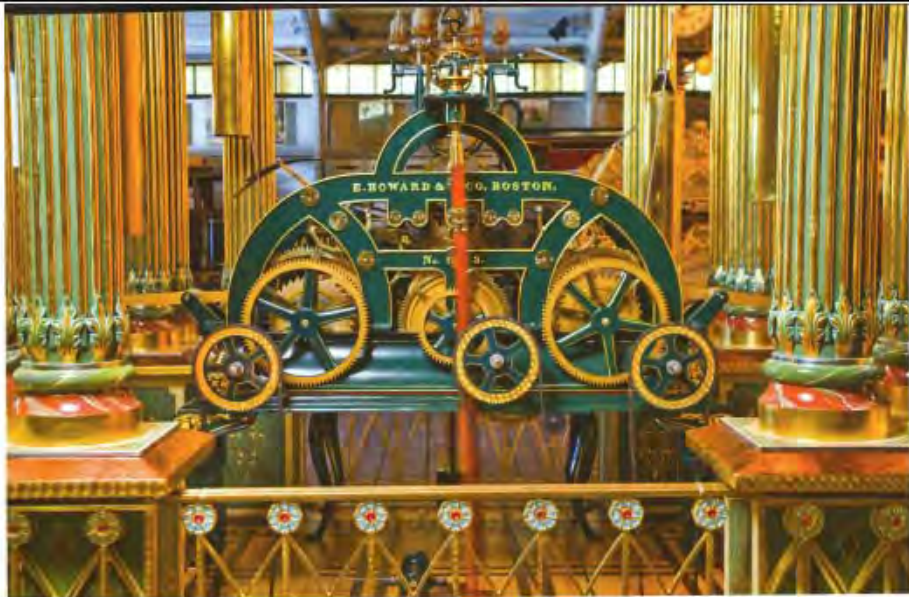
**Lee Badger, Gothic Revival Clock Tower, Phoen, Sutter Photography**

This Gothic Revival clock tower displays an historic clock that served for many years in the steeple of St. Michael's Church in Rochester, New York. Fully operational and historically correct in its new home, the clockworks rest on an elegantly painted cast iron chassis in the base of the tower. A brass drive shaft operates the original clock faces above. Clock enthusiasts recognize it as an E-Howard Company #2 Tower Clock with three separate weight-driven trains for timekeeping, for hour striking and for Westminster chimes at the quarter hours. The five brass bells behind the dial were cast by Taylor in London.

The design concept for the new steel and cast iron tower was a collaboration between architect/designer Lee Phair, clock restoration specialist Durward Carter and the owner of the clock. Lee Badger was commissioned to bring the design into reality at Arvil Works studio in Hedgesville, West Virginia. Constructing the tower was more than a fabrication project. It was an exercise in creative collaboration, construction coordination and metal working versatility. Badger was regularly in touch with the design collaborators to assure that the tower met its functional and aesthetic requirements. The clock specialist provided a full-scale maquette of the clock works to work out mechanical details and came to oversee the critical placement of pulleys and bearing supports. Badger and the architect/designer conferred often to adjust and adapt structural and ornamental details.

The greatest challenges during construction were in managing a myriad of details and in combining a diversity of ironworking processes. The Gothic Revival design required hand forged pieces to coordinate with ornamental castings and structural steel. Many different castings needed to be divided, re-combined and assembled to fit the tower's proportions and dimensions. Badger used a wide variety of different cutting, bending, forming, welding and joining techniques to achieve the necessary combinations. Steel tube, sheets and plates formed the structure. The tower was constructed in two sections for transportation to the owner's site. Overhead conditions in the interior space required a delicate dance between two forklifts to place the upper section onto the lower legs and base.

The tower project took eight working months to complete. The clock specialist and the clock's owner spent several more months perfecting the operational installation of the clock and detailing the tower with gilding and a polished hardwood floor.



**Lee Badger.** Victorian Clock Tower. Photos by Todd Herbst, Sutter Photographers  
 The Victorian Clock Tower followed the Gothic Revival Clock Tower's example. Fourteen feet taller and three times more massive, it was designed to display another historic tower clock, a giant Howard #3 in the collection of the Sanfilippo Foundation in Barrington Hills, Illinois. Like its predecessor, Lee Pharr developed the tower's complex design and Badger created it in his shop. The tower combines more than 11 tons of hand forged elements, castings, stampings, ornamental and structural steel. Decorative pressed steel sheet used in the tower's capitals and cornices came from the W.F. Norman Company's 1909 "Hi-Art" catalog still available today. Six other specialty services and suppliers provided parts and pieces for the project. The tower was assembled

in eight sections including three upper frames, four column assemblies and the base. Badger hired a local rigging company to move the pieces around his shop and stack completed sections outdoors. The growing structure outside the Anvil Works shop drew press attention and the wonderment of casual passers-by. After ten months in construction and final assembly in a Sanfilippo showroom, mechanical restoration experts on the Foundation staff installed the historic clock. Operational fittings and adjustments took another year, along with the elaborate painted and gilded finish. Equally ornate and unusual mechanical antiques surround the tower in its permanent setting including a European salon carousel, fairground and dance hall organs, several steam engines, and a locomotive.

