First-Time Ceiling Work Pays Off for Homeowner

A Do-It-Yourselfer Wanted to Install a Suspended Ceiling, and the Process He Discovered May Just Earn Him a Patent

By Denise Fierke

When Tom Caraher of Farmington Hills, Mich., decided to finish his basement he faced a number of challenges he had never encountered. Not only had he never finished a basement before, he didn’t have the slightest idea how to begin. All he knew was he wanted the project to be as easy as possible.

In the process, he learned a great deal about the walls, wiring, drywall and various other aspects of the job. One of the tasks confronting him was the installation of a suspended ceiling. After reviewing the current methods for installing and levelling the grid work, he was convinced that there had to be a better way of levelling the grid for the Do-It-Your-

Caraher's wire and clip design.
sself. When he found none, he took it upon himself to develop his own system. In the process, he investigated several alternatives: a two-piece plastic strap; a crimpable, two-piece metal design; and a wire and clip design.

The plastic design was rejected because of cost, tool complexity and possible creep problems. The two-piece, crimpable design was rejected because of limited adjustability and complexity. He finally chose the wire and clip design because it offered infinite vertical adjustability, simple design and minimum complexity.

Patent Pending

Caraher finalized the concept and proceeded on a patent that is currently pending. At this point, he decided to begin tooling. He knew from his extensive design and engineering background that there were several open questions regarding manufacturing. Relying on some past experience, he chose Certified Metal Products of Chesterfield Township, Mich., to prototype and tool the part and resolve the open attendant manufacturing issues. After some prototype parts were produced, it was evident that the following problems would be encountered if conventional spring steel were used:

- The parts would have to be heat-treated after forming.
- Warpage would result after heat-treatment.
- If plating were required, stress relieving would be required to eliminate hydrogen embrittlement.

After reviewing the problems
Caraher finalized the concept and proceeded on a patent that is currently pending. With Paul Steinmetz of Certified Metal Products, Steinmetz and Fred Rouse of Regal Steel, Warren, Mich., recommended Inland Steel’s MartINsite Steel, an ultra-high-strength, fracture tough, cold rolled steel, for the application. MartINsite has the highest strength-to-weight ratio of any cold rolled steel and can be used where high strength and/or light weight is required. It also can be applied as a substitute for high carbon alloy steels, spring steels and some non-ferrous materials, which may result in a cost savings. Caraher agreed, the prototypes were produced and Caraher’s ceiling installation proceeded successfully.

Experience gained from the prototypes, the ceiling installation and tooling considerations led to the finalized design in the Summer of 1994. Production tooling was started and completed in February 1995, with the initial parts satisfactory in all respects. Marketing efforts are starting and there are no foreseeable problems.

Now the Hard Part
It is Carahers’ opinion that Inland’s product offers the following advantages in his design:
• No heat treating is required, eliminating distortion and cost problems.
• Dimensional consistency is obtained straight off the tool.
• Pierced holes are clean and burr free.
• Coined areas are smooth and burr free.
• The wire retention is excellent.
• The load to release the wire is low.
• No draws, darts ribs, etc., are required to obtain the necessary stiffness.

Caraher says, “I realize that completing any project requires more than your own input. The advice I received from Certified Metal and Regal Steel has saved me considerable time and cost. I appreciate their efforts very much. Now all I have to do is sell them.” His marketing effort is just beginning. CD

About the Author
Denise Fierke is assistant account executive for public relations at Cramer Krasselt, Chicago.