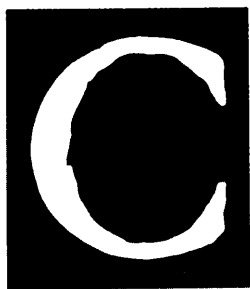


Patenting Progress

Precise and practical mechanical designs were the key to 19th century engineering innovation, as seen from the patent models on exhibit at Cooper Union.



Cooper Union celebrated the ingenuity of 19th century mechanical engineering at its recent exhibit, "A Better Mousetrap: Patents and the Process of Invention." The display of early rotary engines, artificial limbs, pumps, and brick-making machines coincided with the 200th birthday of the New York school's founder, Peter Cooper, an entrepreneur, inventor, and philanthropist best known for his 1830 design of Tom Thumb, the first practical steam locomotive built in North America.

According to Jean Le Mée, chairman of Cooper Union's mechanical

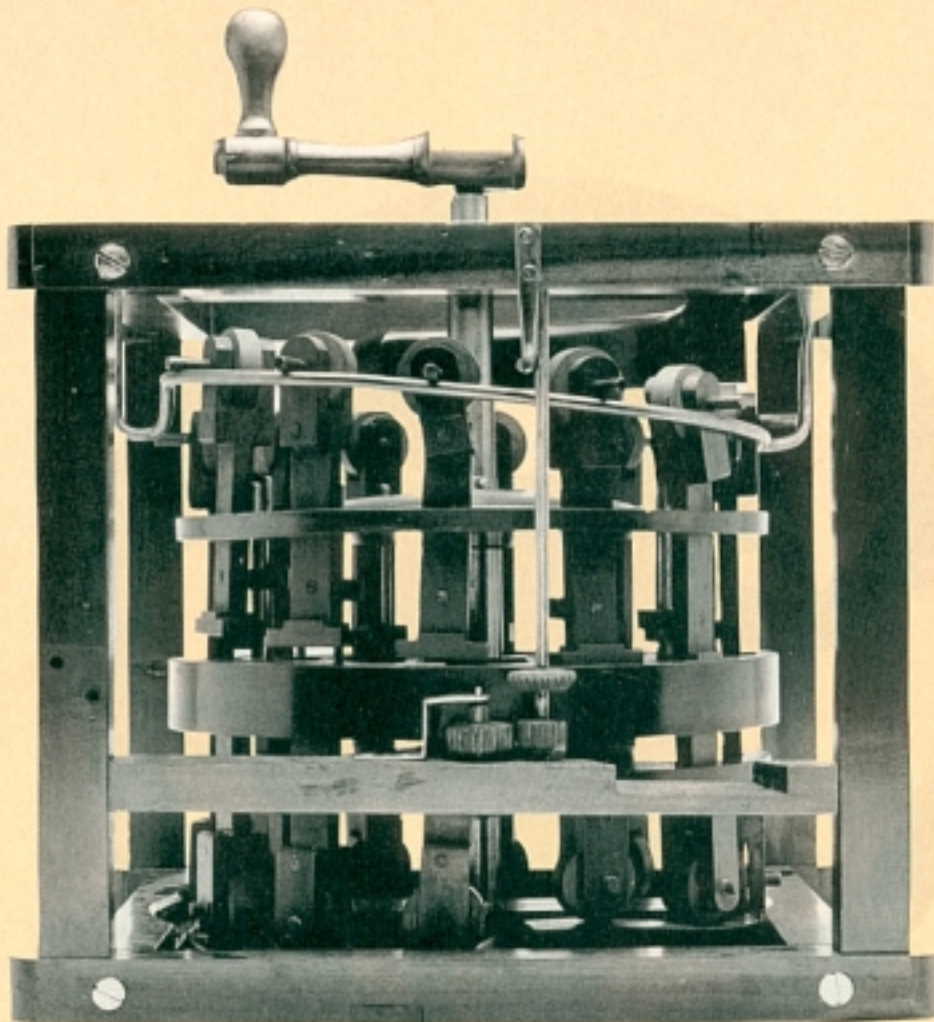
engineering department and exhibit curator, "One overwhelming impression given by the models is their practicality. They fit the traditional American frontier ethos."

That quest to build better mousetraps was spurred by the first patent act passed by Congress in 1790. It instituted a regulation unique to the U.S. patent system: along with drawings and a description, inventors had to file a model.

By 1880, when the model requirement was abolished, more than 200,000 physical replicas had been submitted. More than half that number have been lost due to neglect and abandonment. The items in the current exhibit were selected from 60,000 surviving patent models collected by Cliff Petersen, an aerospace engineer and 1943 Cooper Union graduate.

Interestingly, Le Mée noted that the rise of engineering schools and the teaching of descriptive geometry at the end of the 19th century shifted common practice away from model making and toward the increased use of drawings for thinking and design. Today, that situation is again being reversed. As CAD and techniques like stereolithography come to the fore, physical modeling is playing a leading role in aiding thought and design (see pages 34-43 in this issue).

"Looking at these models, we catch a glimpse of the utter delight of the inventors' minds in coming up with their own versions: useful, though to whom and for what may not be any of our business, but above all different," said Le Mée. "They are a monument to an age, and a free lesson to our own." ■



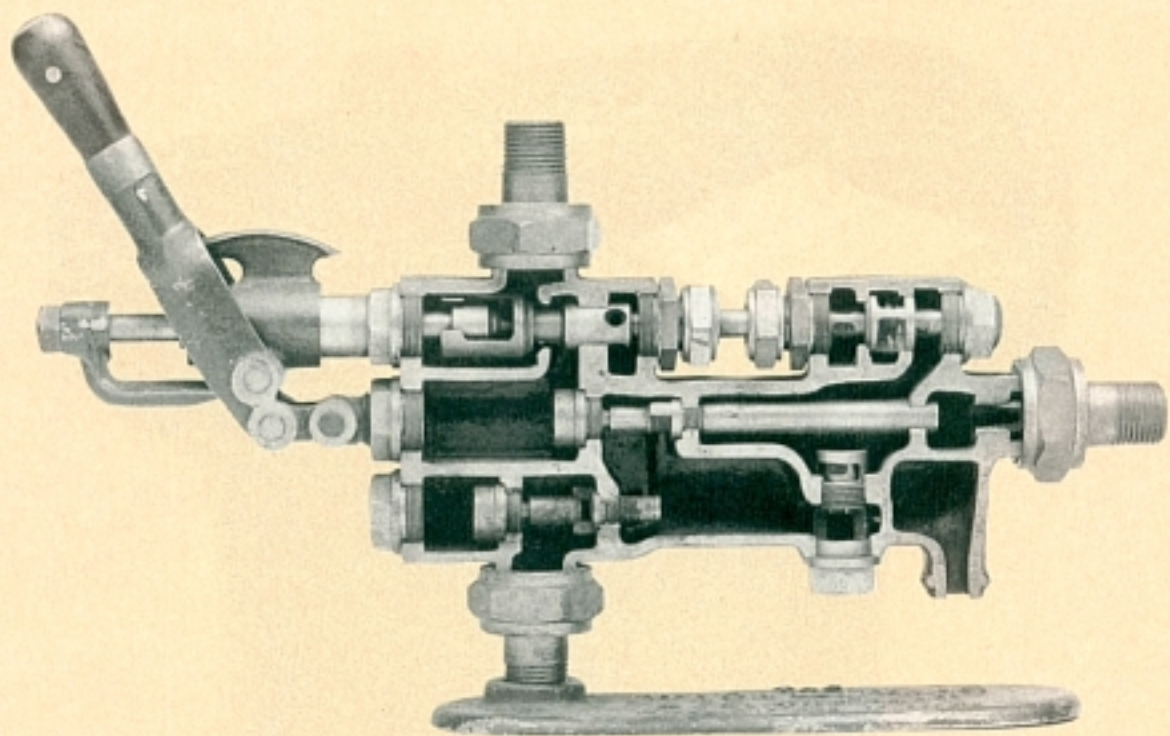
John T. Brown and Moses Fuller, inventors, patent 6933, 1849. Throughout the 19th century, demand for bricks stimulated the design of brick-making machines like this model, which features a mechanical discharging device to eliminate manual brick handling.



Brick-baking kiln; inventor, patent number, and date unknown. The unique design element in this kiln for baking bricks may be the way air is routed through the structure or the way the door closes.



J.M. Simpson, inventor, patent 104,919, 1876. Before the invention of steam and gas turbines, many inventors proposed rotary engines. This design used a rotating cylinder that acted as its own sliding valve to distribute steam on two sides of the piston.



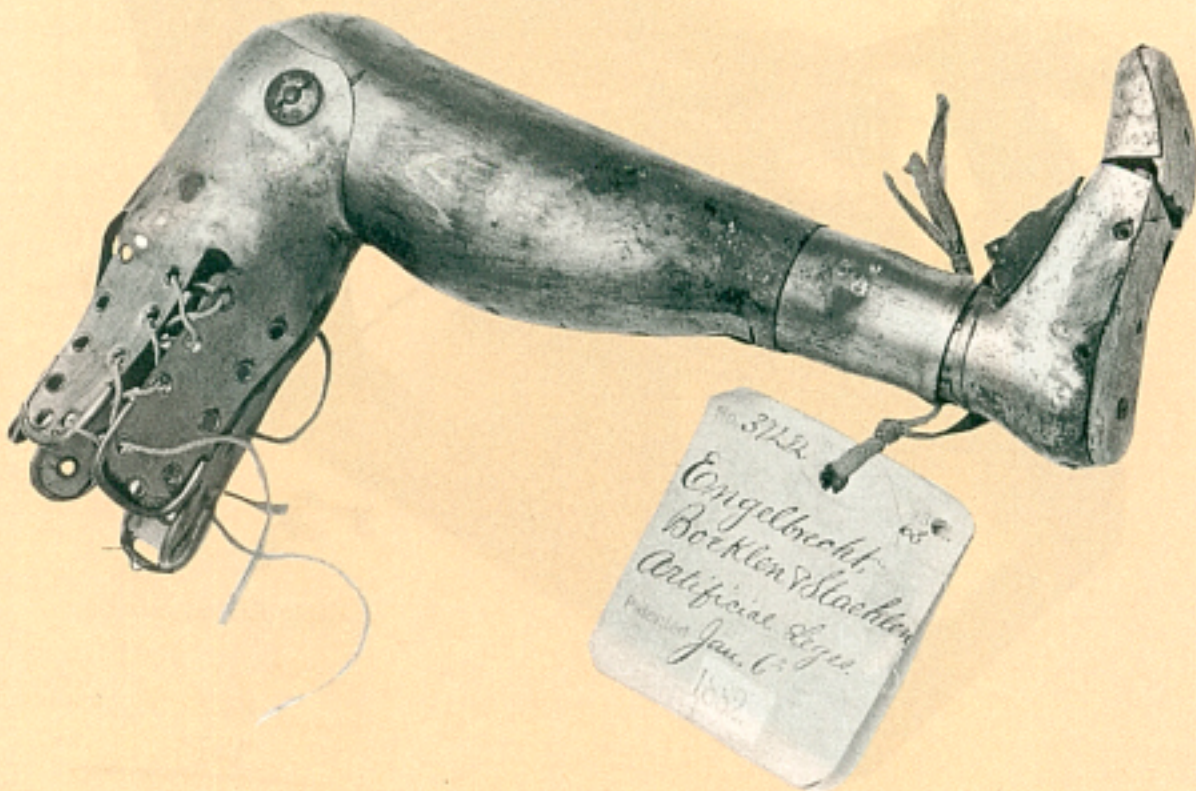
T.M. Eynon and J.W. Gamble, inventors, patent 537,279, 1895. This cutaway model reveals an injector that acts as a pump to introduce water into a boiler under pressure.



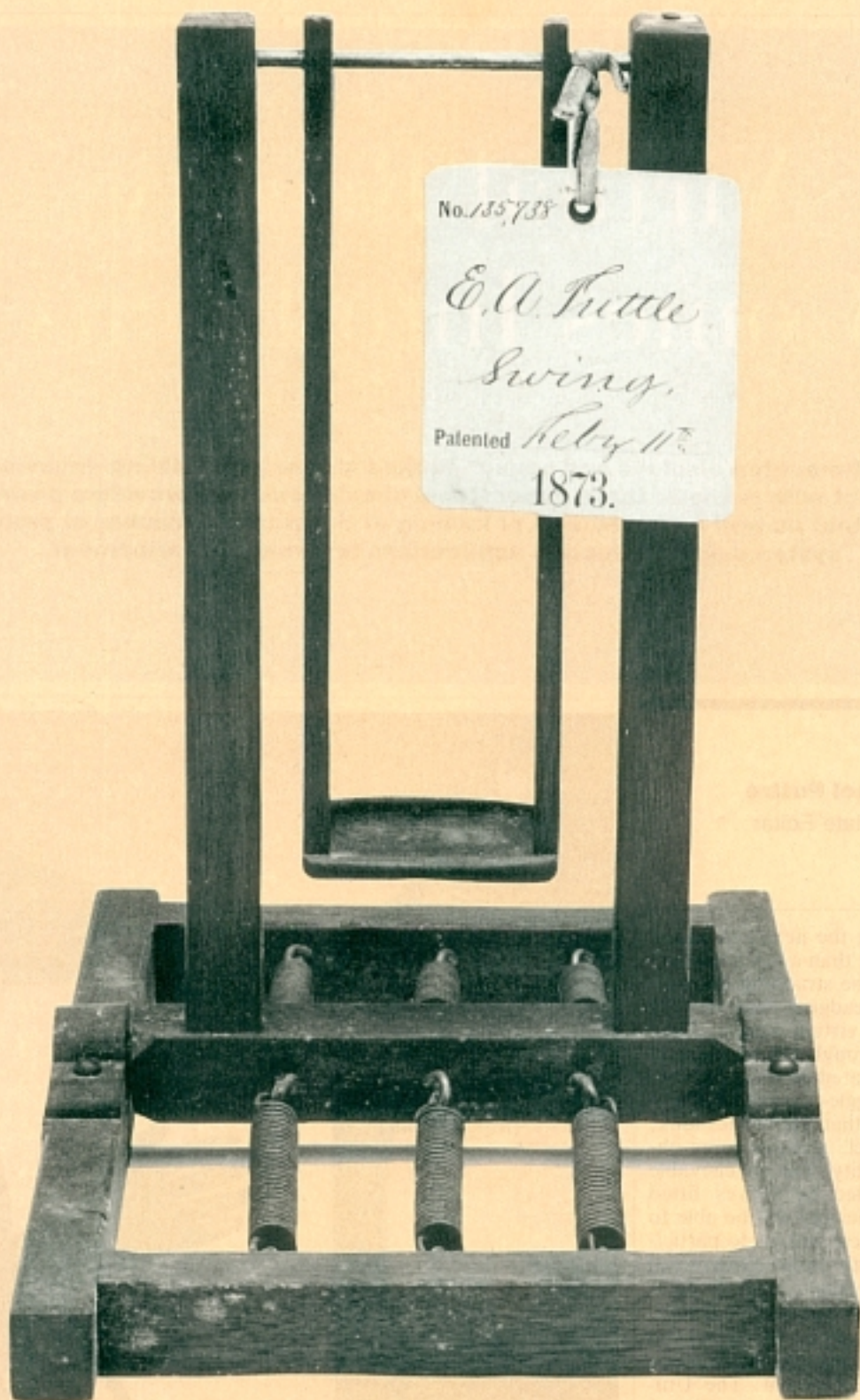
W.H. Alcorn, inventor, patent 137,121, 1873. By pulling on the reins strung between the carved horses, a child could set up an oscillating movement of the carriage's seat.



M. Steiner, inventor, patent 530, 1837. Many early designs tackled everyday themes. This hatbox in the shape of a hat was concocted by an early New York City inventor.



T.F. Engelbrecht, R. Boeklin, and W. Staehlen, inventors, patent 37,282, 1863. The Civil War produced 200,000 amputees and a tremendous



E.A. Tuttle, inventor, patent 135,738, 1873. A double-pendulum swing set is designed so that the swing always remains close to the ground, reducing the danger of injury from an accidental fall.