

Edison's concrete dream

At the turn of the century, Thomas Edison developed a clever system for building monolithic concrete houses. Unfortunately, the public wasn't yet ready to accept his vision of the perfect home.

BY RICHARD W. STEIGER

It was inevitable that the inventive genius, Thomas Alva Edison, would become interested in concrete as a building material. Few people are aware that, in 1899, he began the Edison Portland Cement Company in New Village, N.J. Edison perceived that concrete was versatile, plastic, and durable—the ideal material for home construction. After repeated experiments at his laboratory in West Orange, N.J., he perfected a system of cast-iron molds that would allow a contractor to pour a concrete house in a day.

Relying on gravity

Edison applied for a patent for his new system in 1908, and it was finally granted in 1917.

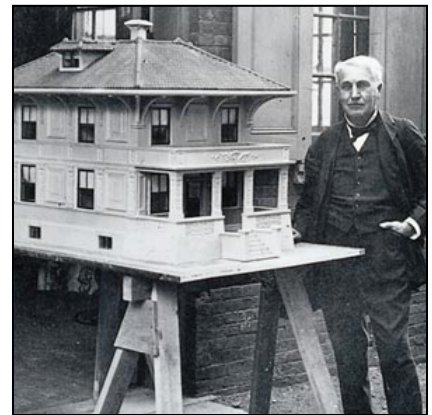
The cast-iron molds served as the forms for his concrete homes, with as many as 500 different sections needed for a single unit. By bolting together a complete set of molds, a contractor could create a house based on Edison's original designs, complete from cellar to chimney, including floors, stairways, roof, bath, laundry tubs, and conduits for electric and water service. To avoid monotony in the final appearance of the homes, Edison designed the molds so they could be used in different combinations.

Edison relied on the force of gravity to distribute the concrete throughout the mold system. Workers lifted concrete to the top of the giant complex of molds using a bucket elevator. After the concrete entered the mold system through a distribution tank at the roof level, the material flowed downward, filling all the molds within 6 hours. The forms were then left in place for 6 days to allow the concrete to cure.

Edison's proposed concrete mix design contained one part cement, two parts sand, and four parts $\frac{3}{4}$ -inch slag cinders, along with a clay additive to prevent the concrete from segregating during placement. In the patent document, Edison says: "I find that by adding a comparatively small amount of fine clay to the mixture, say 20% of the cement used, the tendency to settling is greatly diminished, while at the same time the amount of water used is sufficient to give a high degree of fluidity to the emulsion and permit very successful molding." Edison's special mix design also produced a smooth concrete surface requiring no plastering.

Ahead of its time

To produce delicate design elements in his homes, Edison lined the cast-iron molds with nickel or




U.S. Department of the Interior
National Park Service, Edison National Historic Site

Thomas Edison stands next to a model of his original concrete home design, which includes a parlor, living room, kitchen, and front and back porch on the first floor, and an upper porch, bath, and four bedrooms on the second. Note Edison's use of concrete corbels to gracefully support the cantilever of the roof overhang.

brass. But with the large number of molds required for each job, this boosted the cost of a set of molds to \$25,000. The molds also were time-consuming and labor-intensive to assemble. However, because the molds could be used indefinitely, Edison estimated the cost of each house at only \$1,200, including plumbing, heating, and lighting.

Although a wonderful solution for affordable living space, Edison's concrete homes never caught on. Per-



haps the cost of the molds, the lack of trained craftsmen in the art of building with concrete, or just the perception of concrete as a heavy, monolithic material did not appeal to the general public. Edison's vision simply was ahead of its time. Today, with the surging popularity of homes built with insulating concrete forms, it's apparent that homeowners are finally acknowledging concrete's advantages. 

References

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Edison's patented cast-iron molds were used to build groups of concrete homes in New Jersey, Pennsylvania, Virginia, and Ohio. The four homes shown here are part of a group of 18 Edison homes built in Newark, Ohio, around 1915 by developer Eli Hull. Most of the homes are still in excellent condition. Though the similarities in design are apparent, such as the dormer with three windows and the two second-floor windows in front, some of the structural elements vary. One home has a dormer with a peaked roof, another has an upper porch with decorative railings, and some have built-in horizontal offsets at the first- and second-floor levels. Further distinguishing the homes are the personal touches added by the owners, including decorative paint, shutters, and wood appliques.

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