

Thomas Edison's Concrete House

More than fifty years ago, Thomas A. Edison turned his inventive genius to the problem of monolithic concrete, and became a pioneer in the field of prefabricated housing.

Edison had unshakable faith in the versatility of concrete. Consequently, toward the latter part of 1908, after repeated experiments with concrete, he envisioned a means by which every man could own a home.

The plan was patented on December 22, 1908, and during the following months Edison designed a series of complex molds which would serve as forms for his concrete houses. A New York firm of architects, utilizing Edison's sketches, drew up the detailed plans. Basic to the plans were Edison's ingeniously conceived cast-iron molds, which when assembled would produce in a single operation walls, floors, stairways, roof, bath and laundry tubs, and conduits for electric and water service.

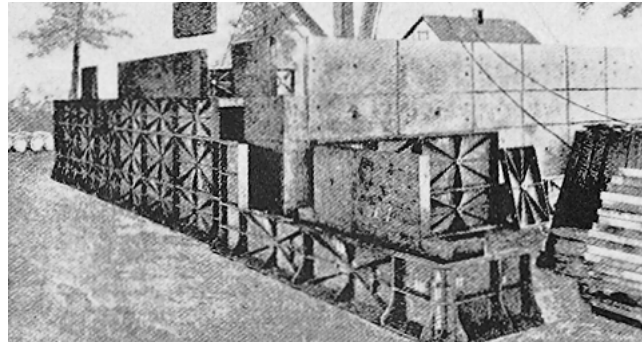
As many as 500 different sectional molds were required for a single unit. Moreover, because of the intricate tracery being attempted, each mold had to be faced with nickel or brass. The cost per set of molds soared to \$25,000. Nevertheless, since each set of molds could be re-used indefinitely, Edison estimated the cost per house unit at \$1,200, including plumbing, heating, and lighting fixtures.

In the course of arriving at a successful series of molds, the plate dimensions were varied. Each section of the giant mold dictated the thickness of its plates. The exterior plates for the wall forms measured from $\frac{3}{4}$ to $\frac{7}{8}$ of an inch in thickness while the interior plates and the underside of the floor and roof molds measured $\frac{1}{2}$ and $\frac{7}{8}$ of an inch respectively.

The cost factor, plus the unending changes in mold designs, delayed the first placing. Even for Edison, the organization of the molds was a feat not easily solved. He constantly revised the plans and added new segments to the mold. Finally, once in place and bolted together, the molds represented the complete shape of the house which he had envisioned.

A second problem was that of a correct concrete mix design. Wooden forms were constructed at Edison's West Orange, New Jersey, lab and a series of tests were conducted to determine the influence of gravity upon the heavier materials such as crushed stone and sand. To overcome the tendency toward segregation during placing, Edison devised an additive. This jelly-like colloid produced a mix which was free-flowing, yet which formed a uniform mass throughout, leaving the surface smooth and reportedly waterproof.

Edison supervised the placing of the first model house at West Orange, watching as the huge mechanical mixer, designed to agitate the concrete constantly during the



Cast-iron molds are assembled for forming.



The Edison monolithic concrete house.

placing operation, was secured into place.

The concrete was conveyed to the top of the giant mold by means of a bucket elevator. Then, entering a distribution tank at the roof level, the mix flowed downward, utilizing the natural force of gravity. Within six hours all the segments of the complex mold from basement to roof were filled. The forms were left in place for six days while the concrete cured.

The molds, upon being removed, disclosed a complete house cast in one piece from cellar to roof. Moreover, because of the smooth finish of the concrete made possible by the colloid additive, plastering was not required. It was only necessary to put in doors, windows, heating unit, and to connect the plumbing and lighting fixtures to complete the house.

By designing the molds so that they were interchangeable and capable of forming multiple combinations, Edison combatted the problem of monotony in the houses. Moreover he added a variety of ornamentation, providing visual beauty as well as sound construction.

The final model house had a parlor, a living room, and a back and front porch on the first floor, with a bath and four bedrooms on the second.

But despite Edison's dedication, his monolithic concrete homes never became popular. Perhaps because he was too far ahead of his contemporaries, Edison's "concrete dream" was destined to gather dust for these many years.