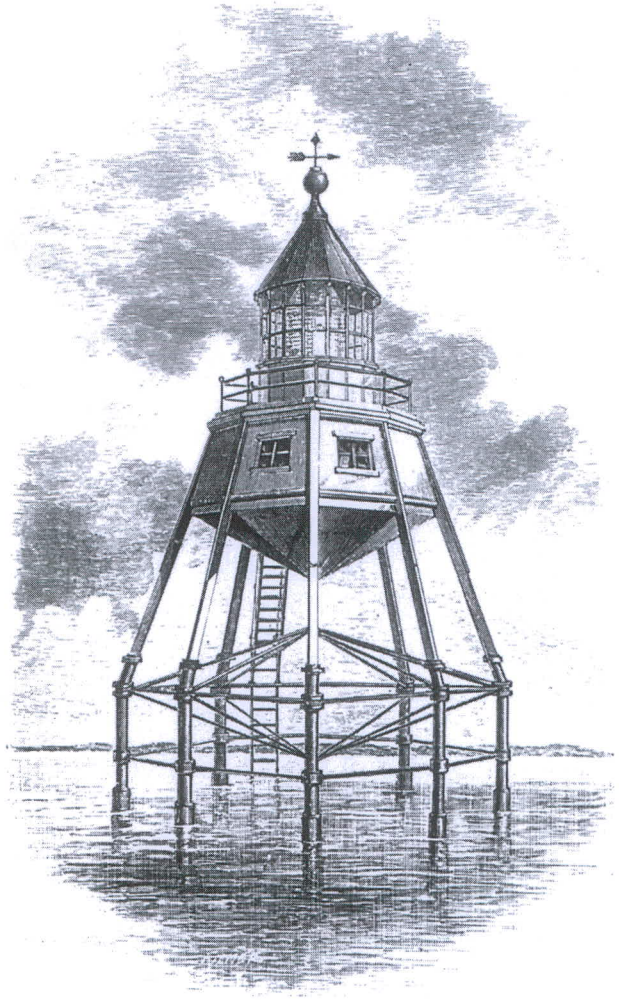
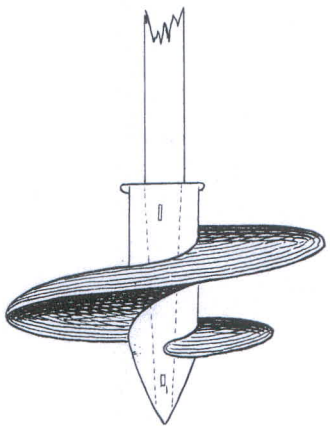
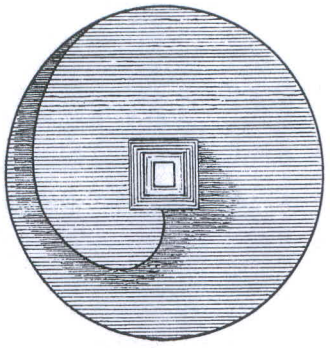
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Cast Iron Mooring Screw
(4 feet diam:)



MITCHELL'S SCREWPILE FOUNDATION

The Mitchell screwpile foundation is named after Alexander Mitchell, the son of the inspector general of barracks in Ireland. Alexander had a talent for arithmetic and pursued a career as an engineer, although hampered by weak eyesight. In 1820, at the age of 40, he became totally blind.

However, he continued to run his engineering firm in partnership with his son, and, remarkably, in the 1830's he patented his design for the cast-iron screwpile.

Mitchell described his invention as, "A bar of iron having at its lower extremity a broad plate or disk of metal in a spiral…on the principle of a screw, in order that it should enter the ground [sea bed] with [ease], thrusting aside any obstacles to its descent, without materially disturbing the texture of the strata it passes through, and that it should at the same time [provide] an extended base, either for resisting downward pressure or an upward strain."

He offered his cast-iron screwpile as a device for "…obtaining a much greater holding power than was possible by any pile or mooring then in use."

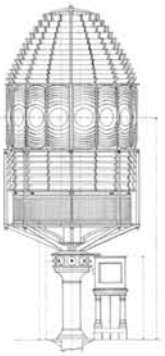
He tested the invention in Scotland's Glasgow Harbor. William Johnstone, the Harbor Master, wrote to Mitchell, "The great strain they bear…the safety for vessels grounding above them, the unexpected ease with which they are put down, and their exemption from frequent lifting, to which other moorings are liable, will make me recommend them."

Mitchell stated that the holding power of the flange of his screwpile was twice as strong as the heaviest anchor used by the British Navy.

Mitchell reached an agreement with Trinity House (the agency in charge of English lighthouses) to construct this new type of structure on the Maupin Sands in the River Thames. His partner for the project was James Walker, who constructed the superstructure. The area was a good test for his design as it was subjected to high winds and strong currents.

The design consisted of eight exterior iron piles, five inches in diameter and one center pile. At the base of each pile was a flanged screw four feet in diameter. The piles were screwed in vertically, then capped with cranked cast-iron collars from which hollow columns continued to the base of the lantern room, sixty nine feet above high water. Each pile was screwed in 22 feet below the sea bed, at which depth each pile could support 69 tons, or a total weight of 621 tons for the nine piles, far more than the superstructure of living quarters and lantern. The lighthouse was completed in 1838.

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Restoration & Preservation



Thomas Point Shoal Lighthouse, MD

The U.S. Lighthouse Society has donated to many lighthouse preservation projects throughout the U.S. Most recently we were honored by being presented with the Preserve America Stewardship Award from The White House for our restoration work at Thomas Point Shoal Lighthouse.

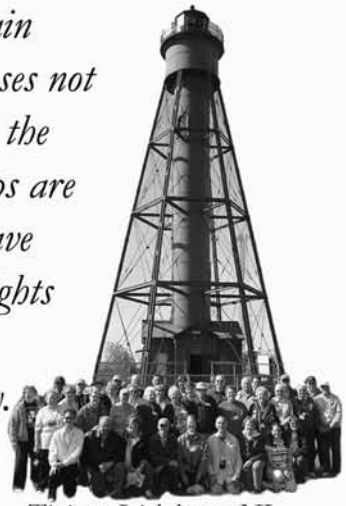
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