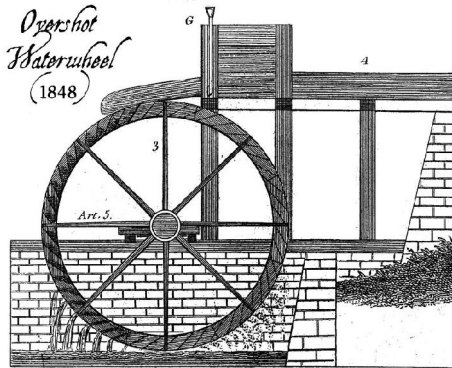
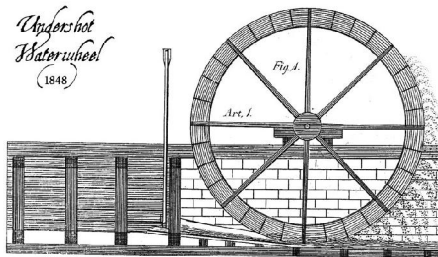


Operation of Water Wheels

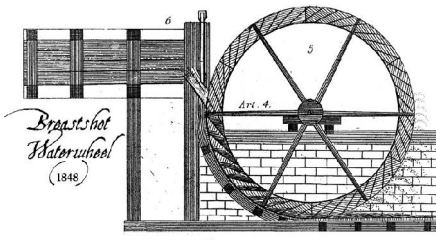
Types of Waterwheels



overshot wheel



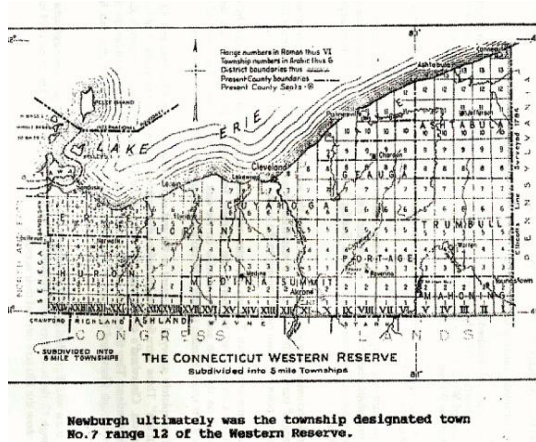
undershot wheel



Breastshot wheel

There are three basic types of waterwheels, each with its own advantages and disadvantages. Each type has been in use since at least Roman times, and remained remarkably stable from AD 500 to the mid-1700s, when a new type, turbines, began displacing them. The three types of waterwheels are the horizontal waterwheel which turns upon a vertical shaft, the undershot vertical waterwheel, and the overshot vertical waterwheel, both of which rotate upon horizontal shafts. For simplicity they are simply known as the horizontal, undershot, and overshot wheels. The undershot and overshot waterwheels rotate around a horizontal axle, like a car tire. A hybrid of the over- and undershot wheels developed some time in the later Middle Ages or colonial period as well, but it used the basic principles of the other two. This was known as the breastshot wheel that worked somewhat like the undershot wheel, but the water came into contact with the breastshot wheel at mid-height (i.e., as if it were hitting us at breast/chest height), and flows down a closely-fitting housing around the wheel. The wheel therefore partially gets the advantage of the moving water like the undershot and also the weight of the falling water, partially like the overshot.

The Mill at Newburgh



For most of its last one hundred years, the 45-foot waterfall on Mill Creek has been a secret to most people. The waterfall is the only one and the tallest in Cuyahoga County. Today it can be seen from the end of Webb Terrace which is located where Turney Road and Warner Road meet at the south end of the Warner Road bridge.

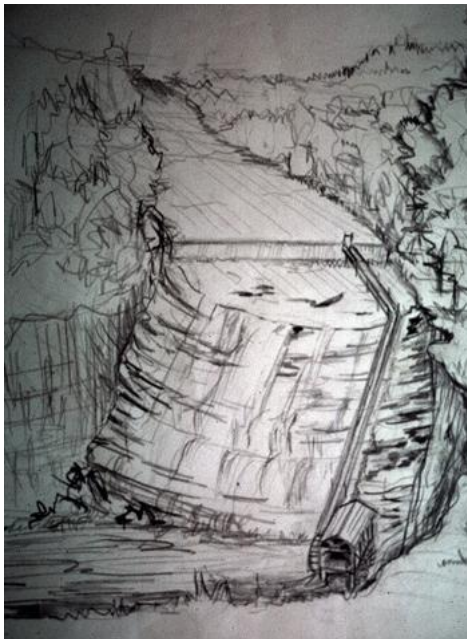
The history begins during the time of Moses Cleaveland and the second year of surveying of the Western Reserve in 1797. Cleaveland's team was charged by the Connecticut Land Company to survey the Western Reserve into 5 x 5 mile townships, then each of these into smaller lots for quick sale. A system of Towns and Ranges was used to designate these 5 x 5 areas.

The five mile columnar segments moving west along the southern border of the "Reserve" were called "Ranges" starting with No. 1 at the Pennsylvania border and the horizontal segment bands from the same point as "Town No.'s" moving to the north. Theoretically the area, Town 7 Range 12, later considered as Newburgh, was bounded by the settlement of Cleveland on the north, the ultimate townships of Brooklyn on the west, Independence on the south, and Warrensville on the east. In 1796 however, land west of the Cuyahoga River was still Indian territory; therefore the actual western border was the river.

The most completely surveyed settlement at the end of the first year was Cleveland and its so-called "out lots". This part of the survey was

completed just before the departure of the survey teams for their home in Connecticut. Cleaveland's efforts were far short of the Connecticut Land Company's shareholders' expectations. They thought the survey would be completed into salable lots within the first year. Even though Cleaveland was one of the larger investors, he never returned after that first year.

A second team was dispatched in 1797 to complete the surveying task. In the Newburgh area of Town 7 Range 12, the land plots were surveyed into 100 acre agricultural plots. At the time land sales were very poor so the Connecticut Land Company, owner of the Reserve, decided to give an incentive of land, material, and money to those pioneers who would come west and begin a business, such as, a blacksmith shop, grist mill, or saw mill. Such established businesses, it was believed, would induce more pioneers to migrate to the Connecticut "Western Reserve".



location of mill at Mill Creek Falls

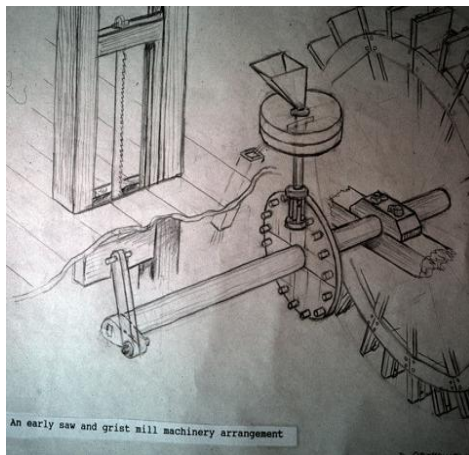
The Connecticut Land Company, signed a contract at Hartford on April 19, 1799 with William Wheeler Williams of Suffield, to build a flour and saw mill to be finished in October 1799 and The Connecticut Land Company was to furnish the mill irons, the lot, and \$150. This was one structure with two purposes and was probably the first such mill to be put in operation on the Reserve.

William Wheeler Williams the enterprising pioneer accepted the bounty and mill irons, and engaged a Major Wyatt to erect a mill for him on the 100 acre lot #464 in what was to become the township of Newburgh. That lot today is bounded by Harvard Avenue on the north, the line of East 93rd Street going south, Force Avenue on the south, and the rear of

properties on the east side of East 82nd Street off of Harvard Avenue.

One of the first "needs" of the pioneer settler was a log cabin then a frame house for his family and a frame barn for his stock. A better barn meant a need for sawn boards. Thus, first was a need for a saw mill and after planting and harvesting grain, then the need for a grist mill occurred.

A letter of Gilman Bryant, Mount Vernon, Ohio in Whittlesey's Early History of Cleveland mentions the following 1799 information about the mill:



"The water was conveyed to the mill in a dugout trough, to an undershot wheel about twelve feet over, with one set of arms, and buckets fifteen inches long, to run inside of a trough, which went down the bank at an angle of forty-five degrees, perhaps, the dam was about four rods above the fall; the mill stones were three and a half feet in diameter, of gray rock."

Samuel Huntington Jr.'s letter to Moses Cleaveland in 1802 had many complaints and the following is an excerpt from it:

"He (W.W. Williams) has put up an uncovered frame about the size of Alderman Hyde's necessary ----- the access to which from every quarter is about 50 feet nearly perpendicular ---- from the top of the bank to the roof of his mill is about 30 feet and the way to get a grist up or down is by climbing with a bag on the shoulder holding

only the roots which project out of the bank ---- the wheel is undershot, and the bolt good for nothing ---- and if it happens to rain or the trough gets soaked with ice, grain, flour, and all gets wet ----"

It is most probable that the mill complex was at first a combination saw and grist mill.