Form No. 10-300 (Rev. 10-74)

THEME: Americans at Work
SUBTHEME: Science and Invention

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC: Charles H. Norton House

AND/OR COMMON: Sharpenhoe

2 LOCATION

STREET & NUMBER: 132 Redstone Hill

__NOT FOR PUBLICATION

CITY, TOWN: Plainville __ VICINITY OF

CONGRESSIONAL DISTRICT: 6th

STATE: Connecticut CODE: 09

COUNTY: Hartford CODE: 003

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	__PUBLIC	X OCCUPIED	__AGRICULTURE	__MUSEUM
X BUILDING(S)	X PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	X PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	__YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		X NO	__MILITARY	__OTHER:

4 OWNER OF PROPERTY

NAME: John P. Iannotti

STREET & NUMBER: 132 Redstone Hill

CITY, TOWN: Plainville __ VICINITY OF

STATE: Connecticut

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: Plainville Clerk's Office

STREET & NUMBER: Municipal Center--Central Square

CITY, TOWN: Plainville

STATE: Connecticut

6 REPRESENTATION IN EXISTING SURVEYS

TITLE: None

DATE

__FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS

CITY, TOWN

STATE

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7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
X EXCELLENT	unrestored DETERIORATED	X UNALTERED	XX ORIGINAL SITE
GOOD	RUINS	ALTERED	MOVED DATE
FAIR	UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Sharpenhoe, the common name of the Charles H. Norton House, is a two and one half story Georgian Revival building. Located in Plainville, Connecticut, the brick structure was built in 1922, but the names of the architect and builder are unknown. Attached to the main block is a one story wing that contains a garage and a utility room. Another one story wing is located at the back or south side of the house. This wing functions as an enclosed porch. Features of the main block are: dormer windows, a large double end chimney on the east and a single chimney on the west, a Palladian style entrance, and a semicircular arched window in the middle of the front elevation. Although the house is a nice example of the Georgian Revival style, and is very well landscaped, the building itself does not appear to be of major architectural significance.

Charles Norton was born in Plainville and lived there until he was approximately 45. After spending the next 33 years living in Providence, Rhode Island, Detroit, Michigan, and Worcester, Massachusetts, he returned to Plainville and built Sharpenhoe. He lived there from 1922 until his death in 1942. After Norton died the family continued to occupy the house until approximately 1958.

The integrity of Sharpenhoe is whole. No significant changes have been made to either the exterior or to the interior since the Norton period. There are no intrusions.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	__ENGINEERING	__MUSIC	__THEATER
X 1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
X 1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		__INVENTION		

SPECIFIC DATES 1922-1940 BUILDER/ARCHITECT unknown

STATEMENT OF SIGNIFICANCE

In an often quoted statement Alfred North Whitehead once wrote that the greatest invention of the 19th century was the method of invention itself. Charles Hotchkiss Norton, the inventor of new types of heavy duty precision grinding machines, was among the many inventors who help document Whitehead's philosophical observation. Largely self taught Norton is a witness to the classic tradition of "cut and paste" invention. By the time of his death his grinding machines had made contributions to the entire spectrum of industry and manufacturing.

LIFE

Charles Hotchkiss Norton, machinist and inventor, was born November 23, 1851, in Plainville, Connecticut. His father, a cabinet maker, worked in a local clock dial factory. After attending local schools the young Charles went to work at the age of fifteen for the Seth Thomas Clock Company as a chore boy. Norton worked for Seth Thomas from 1866 to 1886 during which time he rose from chore boy to manager of the department making tower clocks. By the time he was 35 Norton had mastered the techniques of the manufacture of interchangeable parts as it was developed by the New England clock makers after the Civil War. In addition, during these years Norton learned many of the principles of mechanical design and actually created many public clocks for Seth Thomas.

In 1886 Norton left Seth Thomas to join the Brown and Sharpe Manufacturing Company in Providence, Rhode Island, as an assistant engineer. Norton remained with Brown and Sharpe for only four years, but during this time he became the company's chief engineer responsible for the design of cylindrical grinding machinery. While with Brown and Sharpe Norton made the first of his many contributions to machine grinding technology. In 1890 he became a partner in a Detroit machine tool company. In return for his services as the company's chief designer of new machine tools, the company gave him a small stock interest. Norton remained in Detroit for five years during which time he gained more valuable experience in the design of a wide range of machine tools. In 1896 he returned to Connecticut and, after working briefly as a mechanical engineer in Bridgeport, rejoined Brown and Sharpe.

According to Norton's Dictionary of American Biography biographer, it was, "...during his second sojourn with the Providence firm that Norton formulated

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9 MAJOR BIBLIOGRAPHICAL REFERENCES

William Greenleaf, "Charles Hotchkiss Norton," Dictionary of American Biography, Supplement Three (New York, 1973).

Melvin Kranzburg and Carroll W. Pursell, Technology in Western Civilization, (New York, 1967).

Robert S. Woodbury, History of the Grinding Machine, (Cambridge, 1959).

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY circa 3 acres

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	18	676105	4613860
B			
C			
D			

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE

James Sheire, Historian

ORGANIZATION: Historic Sites Survey, National Park Service

DATE: August 1975

STREET & NUMBER: 1100 L Street NW.

TELEPHONE: 202-523-5464

CITY OR TOWN: Washington

STATE: D.C. 20240

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL X STATE ____ LOCAL ____

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

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his principles of precision grinding that marked his most creative contributions to the American machine tool industry,"[1] Brown and Sharpe were not receptive to Norton's new ideas and in 1900 he left them to form his own firm, the Norton Company, in Worcester, Massachusetts. Norton headed the company until 1919, when it merged with the Norton (no relation) Emery Wheel Company. Norton served the new company as chief engineer of the machinery division until he was in his eighties at which time be became a consulting engineer. After forming his own company Norton began inventing a steady stream of new grinding tools which found wide application in American manufacturing and especially in the young automotive industry.

After selling his own company in 1919 Norton took up permanent residence in Plainville, Connecticut, the town in which he had grown up. Norton remained active until the end of his long life, dying on October 27, 1942, at the age of ninety. He had witnessed and participated in the revolution of American manufacturing techniques from the introduction of interchangeable parts after the Civil War to precision, quality control mass production in the 1940's.

WORK

In his History of the Grinding Machine: A Historical Study in Tools and Precision Production, Robert S. Woodbury writes, "It was the vision and skill of Charles Norton which made the grinding machine into a basic production machine capable of not only precision, but of rapid and economical metal cutting."[2] Norton's most creative contributions to the technology of the grinding machine and machine tools in general came during the period 1896 to 1900. During his years in Detroit Norton recognized that the new automobile industry would require machine tools capable of turning out large, precise parts such as crankshafts. When he returned to Brown and Sharpe in 1896, Norton immediately began running tests on the existing machines to discover why they were inadequate to heavy grinding. He discovered two major faults. One was that the solid abrasive wheels were not in perfect balance. The second fault was that the surface speed was too great for the grades of wheel then in use. Norton made this latter

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1. William Greenleaf, "Charles H. Norton," Dictionary of American Biography, Supplement Three, (New York, 1973), p. 562.

2. Robert S. Woodbury, History of the Grinding Machine: A Historical Study in Tools and Precision Production, (Cambridge, 1959), p. 10.

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discovery by placing chips under a microscope which quickly revealed that the machine was putting most of its energy into melting the work piece instead of into cutting it. Norton next set about inventing, first, a new machine that would be big enough to handle large work pieces, second, wheels that would grind the piece, and, third and most important, a process of adjusting the machine so that it would continuously perform the desired job with the highest degree of precision. Norton was successful. He built a new type grinding machine with a wide wheel into which the piece was fed instead of the wheel transversing the piece. Norton thus invented "plundge grinding." He then selected the desired wheels. Finally he invented the basic principles of "dressing" the machine, i.e. resharpening the grinding wheel at intervals and "truing" the wheel to make sure it was constantly in perfect balance. According to the Dictionary of American Biography, with these ideas Norton, "...developed the precision grinding machine from a light production tool of limited capability to a heavy special-purpose machine integral to modern industrial technology."[3]

After forming his own company in 1900 Norton began manufacturing his large grinding machines. By 1910 his machines were found throughout industry. Henry Ford, for example, installed thirty five of them in his now historic Highland Park plant. In later years Norton continued to make important improvements in the grinding machine transforming it into one of the most precise and versitile of the machine tools. Norton held over 100 patents. He also authored numerous papers for publications such as "American Machinist." He wrote one book, Principles of Cylindrical Grinding (1917). "What Norton had done," an historian of machine tools writes, "was to demonstrate conclusively that grinding was a rapid, flexible, and economic means of production."[4]

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3. Greenleaf, p. 565.

4. Woodbury, p. 107.

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